Department of Defense

Report on Search for Human Radiation Experiment Records

1944 — 1994

Volume 1

Assistant to the Secretary of Defense for
Nuclear and Chemical and Biological Defense Programs

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FOREWORD

On behalf of the Department of Defense, I am pleased to present to the American people this report on our search for information on the Department's participation in human radiation experiments, beginning with the dawn of the Atomic Age in 1944. Our effort was in support of an intensive, Government-wide search for all relevant records directed by President Clinton in January 1994, as part of the administration's initiative for openness in government. Within the Department of Defense, the effort involved hundreds of people throughout the Military Services and Defense Agencies. In this regard, I recognize the tremendous effort required in a search of this magnitude and want to thank them for their dedicated work.

Within this report, the reader will find four basic types of information: first, guidance for the search issued by the President and more detailed instructions issued by other officials; second, extensive summaries of several projects which either were "human radiation experiments" or for other reasons have attracted wide public attention; third, brief descriptions of the more than 2,000 projects initially identified in the records search as having some connection between humans and radiation; and finally, references for obtaining additional information.

Of note, although most of the above projects actually involved common and routine medical practices, in the spirit of openness, all are included in this report. Further, in cases where we have not been able to reconstruct full information from the old records, this fact is so noted with an explanation that more data will be provided in a subsequent report.

I believe this report will answer many of the questions which the American people may still have about human radiation experiments, and I invite them to let us know of any more information that we might be able to provide.

INTRODUCTION

BACKGROUND INFORMATION

The intent of this publication is to inform the public about the Department of Defense (DoD) involvement in ionizing radiation experiments, studies or projects with human subjects which occurred from 1944 to 1994. This information is part of DoD's extensive effort in support of President William J. Clinton's openness in government initiatives that began in January 1994. In the spirit of openness, this book includes a wide range of records retrieved by the DoD.

Defining human radiation experiments (HRE) is essential if the reader is to understand the "what" and the "why" regarding the contents of this publication. To focus this effort, Executive Order (EO) 12891, signed by President Clinton on 15 January 1994, established the Presidential Advisory Committee on Human Radiation Experiments (ACHRE) and provided the definition used by the DoD and other Federal departments and agencies in identifying HRE.

EO 12891 defined Human Radiation Experiments as:

> 1. Experiments on individuals involving intentional exposure to ionizing radiation. This category does not include common and routine clinical practices, such as established diagnosis and treatment methods involving incidental exposures to ionizing radiation.
>
> 2. Experiments involving intentional environmental releases of radiation that were designed to test human health effects to ionizing radiation, or were designed to test the extent of human exposure to ionizing radiation.

When reading this book, it is essential to remember the three components of an HRE:

1. There had to be "human" participation.
2. There had to be involvement of ionizing "radiation."
3. There had to be an "experimental" element.

In this regard, we are aware that many of the 2,600 studies initially reported by the DoD to the ACHRE did not meet the established criteria. However, to ensure a full accounting, the entire range of experiments/studies/projects was forwarded to the ACHRE for review and analysis. Such reporting was consistent with DoD's guidance which required researchers to err on the side of inclusion during the records search when there was insufficient information to determine whether or not the studies were human radiation experiments within the scope of the definition. Of the 2,600 studies forwarded to the ACHRE, 2,389 are listed in this book and provided without judgment. The difference between the two totals is due to analysis conducted by the DoD after forwarding of the studies to the ACHRE that identified some studies as being duplicate reporting, some that were not implemented, and others which were found not to involve humans. The results of this refined DoD records search for experiments or studies are included in appendix 1.

In some of the 1944 - 1974 projects, the RECC was unable to compile a complete description. In these instances, a notation has been made in the project entry that if this information becomes available, it will be provided in volume 2 to this publication.

In setting the scope, EO 12891 also identified certain events that required specific attention by the ACHRE. They are the "Green Run" release at the Hanford Reservation, the six radiation warfare tests conducted at Dugway Proving Ground in Utah, and four atmospheric radiation tracking tests conducted in 1950 near Los Alamos, New Mexico. These are addressed in this book along with information about both HRE and non-HRE events involving ionizing radiation that have stirred public interest. These are

total body irradiation studies, nasopharyngeal irradiation, cold weather tests involving radioactive iodine-131, human aspects research involving U.S. nuclear weapons tests, and food irradiation studies. Appendices 2 through 4 provide additional reference information.

Historical Overview of 1944 - 1974 and What Led to Human Radiation Experiments

In the years following World War II, a period of intense confrontation evolved between the communist and democratic governments of the world. Many former allies became fierce opponents in an era that became known as the Cold War. The two principal powers—the United States and the Soviet Union—came to be symbolically identified as superpowers advocating opposing ideologies. The military establishments in each camp heightened their preparations for what many expected to become an eventual state of open warfare.

Into this already highly charged environment came the threat of nuclear warfare. The United States developed the first atomic bombs during World War II and used them against Japan. The war ended soon after the United States dropped the bombs on Hiroshima and Nagasaki. The United States' monopoly of atomic weapons lasted only until 1949 when the Soviet Union detonated its first atomic bomb, thereby starting the nuclear arms race.

When a nuclear weapon explodes near the ground, most of the energy goes into three effects. Two of these are readily apparent and received most of the initial focus of attention: the blast (shock wave) and thermal energy (heat). Pictures of the aftermath of an atomic explosion portray the vast damage caused by these two effects. The vivid pictures of Hiroshima and Nagasaki after the atomic bombing focused on the effects of blast and heat.

The third effect was completely new in the annals of warfare: ionizing radiation. The short-term effects of high-level exposures to ionizing radiation generated by an atomic bomb were self-evident because they led to almost immediate death. What was least known were the long-term effects of a less-than-immediately lethal exposure. The body of knowledge about these effects was woefully deficient as the United States began preparing for a possible nuclear conflict. The need to expand the body of knowledge about this phenomenon was pressing, and initiatives were undertaken to meet the need. The newly formed DoD, along with other agencies, began research into the effects of ionizing radiation.

Ionizing radiation effects were not completely new to science. Ionizing radiation had been used in both industrial and medical procedures before World War II. As the nuclear age began, the benefits and hazards of exposure to ionizing radiation were just being realized. Although it could be deadly in certain instances, ionizing radiation also showed great promise in treating serious illnesses and analyzing metals and substances.

X-ray machines emitting ionizing radiation enabled doctors to "see" illnesses or injuries in the body whose diagnosis previously required exploratory surgery or educated guesses. In industrial uses, x-ray machines permitted viewing the insides of welds and metals to identify defects. Many lives would be saved by detecting such deficiencies.

However, in many of the early applications of ionizing radiation, it soon became clear that more knowledge about the effects of long-term exposure to ionizing radiation was necessary. It also became apparent to both the military and scientific communities that they shared a common interest in broadening the body of knowledge in this arena. A period of cooperation began between these two communities to develop the critically needed knowledge about ionizing radiation. This document is a record of that cooperation and the research activities that were part of this joint search for additional knowledge.

The Beginning of the Human Radiation Experiment Record Search Effort

Even before the end of the Cold War in the early 1990s, questions arose concerning U.S. Government

involvement in human subject ionizing radiation research. In November 1986, U.S. Representative Edward J. Markey of Massachusetts reported that the U.S. Government had conducted experiments exposing humans to radioactive material.[1] However, this report received relatively little public attention at the time. Shortly after the end of the Cold War, there was renewed interest about human subject experimentation that occurred during the Cold War era. In the early 1990s, this interest began to accelerate.

In November 1993, the Albuquerque Tribune published a series of articles by reporter Eileen Welsome citing a group of hospital patients who had been injected with plutonium as part of a Government-sponsored research study begun before the end of World War II. In the same month, a congressional report identified a number of cases of planned environmental releases of radiation at nuclear weapons production sites after World War II.[2] In early December 1993, Secretary of Energy Hazel O'Leary publicly stated that, in addition to conducting unannounced nuclear weapons tests, the U.S. Government may have used human subjects in ionizing radiation research.

The Department of Energy (DOE) opened a national help line on 24 December 1993 to provide the public with a means to submit reports of possible or suspected experimental exposures. On 3 January 1994, the Human Radiation Experiments Interagency Working Group was established, chaired by the Secretary to the Cabinet and composed of the Departments of Defense, Energy, Justice, Health and Human Services, and Veterans Affairs, as well as the Central Intelligence Agency, the National Aeronautics and Space Administration, and the Office of Management and Budget. This group focused its effort to identify ionizing radiation experiments involving human subjects, hereafter referred to as HRE.

In support of this initiative, Secretary of Defense Les Aspin, on 7 January 1994, instructed the DoD to compile information on the Department's radiation experiments. Secretary Aspin appointed the Assistant to the Secretary of Defense (Atomic Energy) (ATSD[AE]), Dr. Harold P. Smith, Jr., as the DoD focal point for this effort. Concurrently, President Clinton responded to growing public interest in this issue by establishing the ACHRE by EO on 15 January 1994.[3]

The ACHRE was charged with the responsibility to:

- Review experiments conducted from 1944 to 1974 (later extended to 1994)
- Evaluate ethical and scientific standards and criteria on human radiation experiments conducted or sponsored by the U.S. Government
- Prepare a final report to the President on its findings.

The year 1974 was originally established as the end period because, on 30 May 1974, the Department of Health, Education, and Welfare (DHEW) (now Health and Human Services [HHS]) issued regulations protecting human subjects in research.

The DoD also established the Radiation Experiments Command Center (RECC) on 31 January 1994 under the direction of the ATSD(AE) to act as the central repository of records for the DoD effort. The RECC was charged with achieving a full accounting of DoD's involvement in any ionizing radiation research and experimentation on human subjects during the past fifty years. The RECC:

- Coordinated the DoD effort in the HRE records search with the services and DoD agencies
- Conducted an extensive examination and review of relevant documents at the National Archives and National Records Centers throughout the United States
- Coordinated the declassification of more than 1,200 documents
- Initially identified approximately 2,600 possible DoD-sponsored projects or experiments (a high number due to the DoD policy to err on the side of inclusion to ensure full disclosure. Subsequently, this number was reduced to 2,389 after

duplicates and erroneous submissions were identified.)
- Collected and forwarded copies of approximately 10,000 records to the ACHRE
- Coordinated the DoD's review of the ACHRE's draft Final Report to ensure completeness and accuracy
- Participated in six congressional hearings as well as several briefings on DoD-sponsored activities.

Additionally, the RECC began an outreach program to respond to public inquiries. Under this process, the RECC received DoD-related inquiries forwarded by the DOE national help line, as well as direct inquiries from the public, members of Congress, and the White House. To date, the RECC has received almost 7,000 inquiries.

After researching these inquiries, the RECC found that very few involved any human radiation experimentation. Approximately 40 percent of the inquiries involved U.S. atmospheric nuclear weapons testing participants. The Defense Special Weapons Agency (DSWA), formerly the Defense Nuclear Agency (DNA), administers a separate program for these participants called the Nuclear Test Personnel Review (NTPR) program. The RECC referred all identified U.S. atmospheric nuclear weapons test participants to the NTPR program.

A significant number of inquiries were related to approved and accepted medical procedures of the day. Other exposures occurred in occupational situations not related to human subjects research. There were also a significant number of inquiries that did not contain enough information from which to draw a conclusion.

With release of the ACHRE Final Report and the conclusion of the committee's work on 3 October 1995, the DoD reaffirmed its commitment to ensuring full and complete disclosure of its involvement in any human radiation experiments. On 30 October 1995, Secretary of Defense William J. Perry reappointed Dr. Harold P. Smith, Jr., ATSD(AE), as the DoD focal point to continue the efforts toward openness.[4]

On 2 November 1995, Dr. Smith further amplified Secretary Perry's reappointment memorandum by stating that "the RECC has begun initial work to publish a book to reflect DoD's commitment to openness by summarizing what DoD found during its human radiation experiments review."[5] This publication is the result of that effort.

Notes

1. U.S. House of Representatives, Committee on Energy and Commerce, Subcommittee on Energy Conservation and Power, November 1986, "American Nuclear Guinea Pigs: Three Decades of Radiation Experiments on U.S. Citizens."

2. U.S. Senate, Committee on Governmental Affairs, 11 November 1993, "Nuclear Health and Safety: Examples of Post World War II Radiation Releases at U.S. Nuclear Sites," GAO/RCED-94-51-FS.

3. Presidential Documents, "Executive Order 12891 of January 15, 1994," *Federal Register*, vol. 59, No. 13, 20 January 1994.

4. Memorandum from the Secretary of Defense, Subject: Response by the DoD to the Findings and Recommendations of the ACHRE, dated 30 October 1995.

5. Memorandum from the Assistant to the Secretary of Defense (Atomic Energy), Subject: Response by the DoD to the Findings and Recommendations of the ACHRE, dated 2 November 1995.

CHAPTER 1

DoD Human Subjects Protection Policy 1944 to the Present

Introduction

The possibility of having to conduct combat operations on a battlefield contaminated by the effects of atomic, biological, or chemical weapons prompted the Department of Defense (DoD) to initiate research concerning the biomedical effects of these agents on humans. This concern and that for the safety of human volunteers in potentially dangerous research and the human experimentation atrocities revealed at the end of World War II were driving forces behind the development of the DoD human subjects protection policy. These concerns sparked years of serious debate among DoD and non-DoD medical and scientific authorities regarding the use of human participants in research. The culmination of this debate resulted in a written policy in February 1953 by Secretary of Defense Charles E. Wilson known as the Wilson Memorandum (see figures 1, 2 and 3.)

In the years before the Wilson Memorandum, senior DoD officials and high-level DoD boards participated in developing DoD's human subjects protection policy. For example, the Nuclear Energy for the Propulsion of Aircraft/Medical Advisory Committee on Radiation Tolerance of Military Personnel (NEPA/MAC), the Committee on Medical Sciences (CMS), the Joint Panel on the Medical Aspects of Atomic Warfare (JPMAAW), the Research and Development Board (RDB), the Armed Forces Medical Policy Council (AFMPC), and the General Counsel's (GC) office of the Office of the Secretary of Defense (OSD) were all substantively involved in formulating a policy for using humans in research studies.[1]

This initial human subjects protection policy debate spanned 1942 to 1953 until the Wilson Memorandum established a formal policy. This directive required each military department to implement the policy as outlined in the memorandum. Thus, the Wilson Memorandum set the standard for each service's development of human subjects protection policy from 1953 through mid-1974. In May 1974, the Department of Health, Education, and Welfare (DHEW) issued its own comprehensive regulations for DHEW human subject research. These regulations were the foundation for today's DoD human subjects protection policy.

Evolution of DoD Human Subjects Protection Policy

As early as 1942, concern regarding the participation of human subjects in medical research

Terms Used in This Chapter	
dosimetry	measurement of the number of roentgens absorbed in a single exposure to radiation
ionizing radiation	*(see appendix 4 for discussion)*
Radioisotope	a radioactive isotope of a chemical element used in medical therapy, biological research
World War II	WWII, 1939-1945, fought between the Allies (Great Britain, France, the Soviet Union, Canada, and the United States as well as other nations) and the Axis (Germany, Italy, Japan and other countries)

Acronyms Used in This Chapter	
ACHRE	Advisory Committee on Human Radiation Experiments
AEC	Atomic Energy Commission [predecessor of the Department of Energy]
AFMPC	Armed Forces Medical Policy Council
AFR	Air Force Regulation
AFRRI	Armed Forces Radiobiology Research Institute
AFSWP	Armed Forces Special Weapons Project [predecessor to the Defense Special Weapons Agency]
AMA	American Medical Association
AR	Army Regulation
CMS	Committee on Medical Sciences of the Research and Development Board
DBM	Division of Biology and Medicine (of the Atomic Energy Commission)
DHEW	Department of Health, Education, and Welfare
DHHS	Department of Health and Human Services
DNA	Defense Nuclear Agency [now DSWA]
DoD	Department of Defense
DSWA	Defense Special Weapons Agency
GC	General Counsel
HURAD	Human Use and Regulatory Affairs Division
IRB	Institutional Review Board
JAG	Judge Advocate General
JCS	Joint Chiefs of Staff
JPMAAW	Joint Panel on the Medical Aspects of Atomic Warfare
LASL	Los Alamos Scientific Laboratory, now Los Alamos National Laboratory (LANL)
NEPA/MAC	Nuclear Energy for the Propulsion of Aircraft/Medical Advisory Committee
ONR	Office of Naval Research
OSD	Office of the Secretary of Defense
RDB	Research and Development Board
TBI	total-body irradiation
USAF	United States Air Force
USUHS	Uniformed Services University of the Health Sciences

and concern for their safety was raised by the Committee on Medical Research of the Office of Scientific Research and Development. During its forty-second meeting on 29 October 1942, the committee stated:

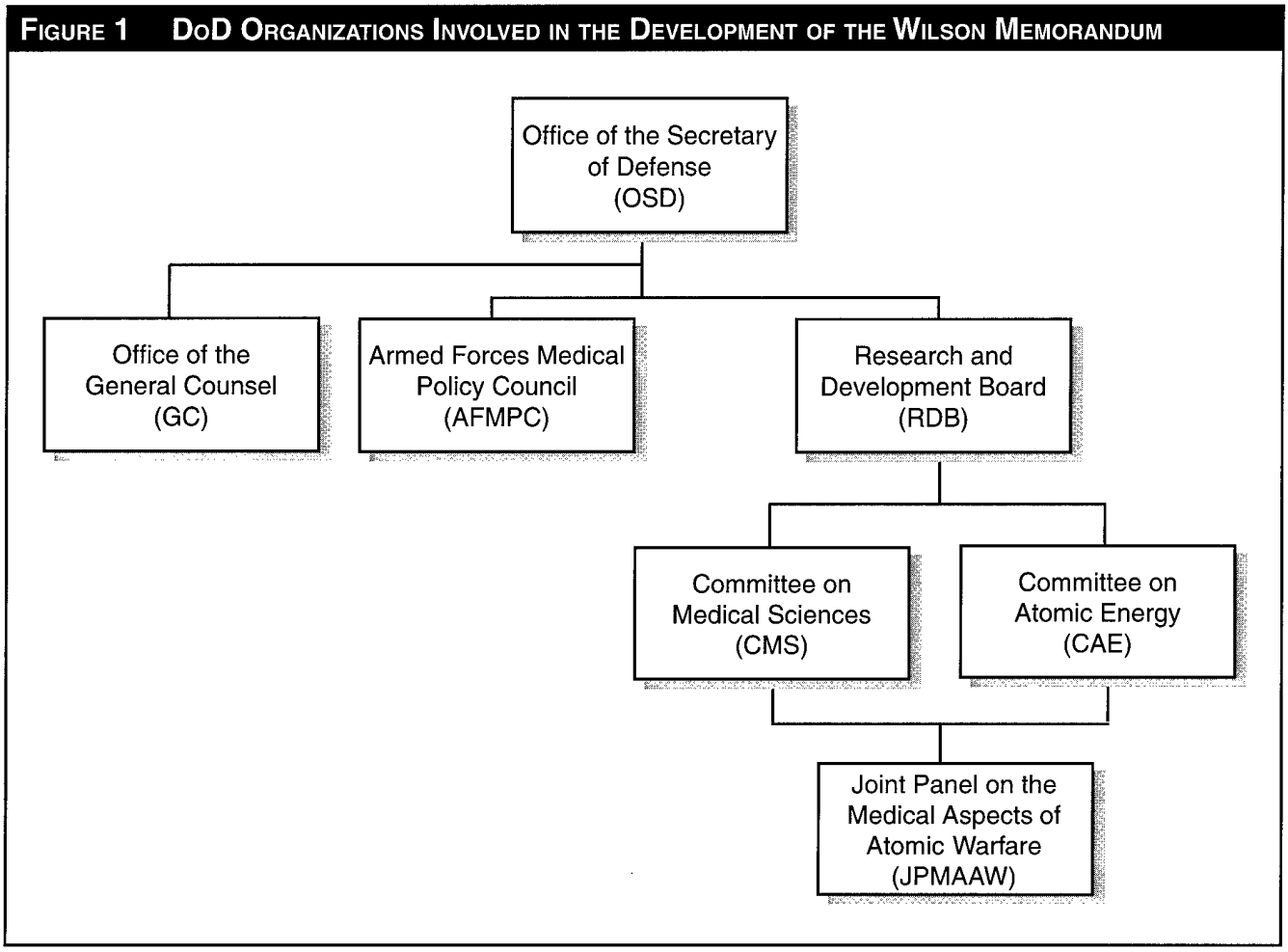
> that experiments on human beings were both desirable and necessary in certain types of medical research related to the war effort; that the subjects of such experiments should be volunteers whose attention had been called to the dangers of the experiment; and that no categorical answer could be given to the desirability of experiments on human beings in particular cases until after all the details of the proposed experiments are placed before the Committee.[2]

The issues of informed consent and institutional review were central to the discussion.

During the late 1940s, DoD and the United States Air Force (USAF) investigated the possibility of developing a nuclear-powered aircraft, a program commonly referred to as the Nuclear Energy for the Propulsion of Aircraft (NEPA) project.

In 1949, NEPA officials recommended conducting unclassified research on human volunteers to study the biological effects of radiation on the air crew of a nuclear-powered aircraft.[3] This recommendation highlighted the need for a DoD-wide policy for using humans in research. At a meeting of the NEPA/MAC held on 3 April 1949, the

FIGURE 1 DoD ORGANIZATIONS INVOLVED IN THE DEVELOPMENT OF THE WILSON MEMORANDUM



committee argued that human experimentation was necessary for several reasons. First, animal experiments showed that animals of various species as well as animals of different strains within a given species differed in their response to given amounts of radiation. Therefore, it would be impossible to predict accurately what would happen to humans exposed to moderate doses of radiation. Second, although therapeutic exposures of radiation provided some indications of how sick people responded, patients' responses varied depending on their clinical condition. Often, disease effects were indistinguishable from radiation effects. Finally, accidental exposures and the mass exposures at Hiroshima and Nagasaki in Japan provided some indications of how healthy people responded to radiation, but there were no scientific controls over these types of exposures and no accurate dosimetry, which made it impossible to draw any definitive conclusions.[4]

In addition to providing these justifications for human experimentation, the committee endorsed three principles laid down by the Judicial Council of the American Medical Association (AMA) in 1946 to govern the use of humans in medical research:

1. The voluntary consent of the person on whom the experiment is to be performed must be obtained.
2. The danger of each experiment must have been previously investigated by animal experimentation.
3. The experiment must be performed under proper medical protection and management.[5]

FIGURE 2 THE WILSON MEMORANDUM

C O P Y

SECRETARY OF DEFENSE
Washington

26 Feb 1953

MEMORANDUM FOR THE SECRETARY OF THE ARMY
SECRETARY OF THE NAVY
SECRETARY OF THE AIR FORCE

SUBJECT: Use of Human Volunteers in Experimental Research

1. Based upon a recommendation of the Armed Forces Medical Policy Council, that human subjects be employed, under recognized safeguards, as the only feasible means for realistic evaluation and/or development of effective preventive measures of defense against atomic, biological or chemical agents, the policy set forth below will govern the use of human volunteers by the Department of Defense in experimental research in the fields of atomic, biological and/or chemical warfare.

2. By reason of the basic medical responsibility in connection with the development of defense of all types against atomic, biological and/or chemical warfare agents, Armed Services personnel and/or civilians on duty at installations engaged in such research shall be permitted to actively participate in all phases of the program, such participation shall be subject to the following conditions:

a. The voluntary consent of the human subject is absolutely essential.

(1) This means that the person involved should have legal capacity to give consent; should be so situated as to be able to exercise free power of choice, without the intervention of any element of force, fraud, deceit, duress, over-reaching, or other ulterior form of constraint or coercion; and should have sufficient knowledge and comprehension of the elements of the subject matter involved as to enable him to make an understanding and enlightened decision. This latter element requires that before the acceptance of an affirmative decision by the experimental subject there should be made known to him the nature, duration, and purpose of the experiment; the method and means by

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per S. Clements
DDR&E OSD(PA)

FIGURE 2 THE WILSON MEMORANDUM (CONTINUED)

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which it is to be conducted; all inconveniences and hazards reasonably to be expected; and the effects upon his health or person which may possibly come from his participation in the experiment.

(2) The concept of the human subject shall be in writing; his signature shall be affixed to a written instument setting forth substantially the aforementioned requirements and shall be signed in the presence of at least one witness who shall attest to such signature in writing.

(a) In experiments where personnel from more than one Service are involved the Secretary of the Service which is exercising primary responsibility for conducting the experiment is designated to prepare such an instrument and coordinate it for use by all the Services having human volunteers involved in the experiment.

(3) The duty and responsibility for ascertaining the quality of the consent rests upon each individual who initiates, directs or engages in the experiment. It is a personal duty and responsibility which may not be delegated to another with impunity.

b. The experiment should be such as to yield fruitful results for the good of society, unprocurable by other methods or means of study, and not random and unnecessary in nature.

c. The number of volunteers used shall be kept at a minimum consistent with item b., above.

d. The experiment should be so designed and based on the results of animal experimentation and a knowledge of the natural history of the disease or other problem under study that the anticipated results will justify the performance of the experiment.

e. The experiment should be so conducted as to avoid all unnecessary physical and mental suffering and injury.

f. No experiment should be conducted where there is an a priori reason to believe that death or disabling injury will occur.

g. The degree of risk to be taken should never exceed that determined by the humanitarian importance of the problem to be solved by the experiment.

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FIGURE 2 THE WILSON MEMORANDUM (CONTINUED)

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h. Proper preparation should be made and adequate facilities provided to protect the experimental subject against even remote possibilities of injury, disability, or death.

i. The experiment should be conducted only by scientifically qualified persons. The highest degree of skill and care should be required through all stages of the experiment of those who conduct or engage in the experiment.

j. During the course of the experiment the human subject should be at liberty to bring the experiment to an end if he has reached the physical or mental state where continuation of the experiment seems to him to be impossible.

k. During the course of the experiment the scientist in charge must be prepared to terminate the experiment at any stage, if he has probable cause to believe, in the exercise of the good faith, superior skill and careful judgment required of him that a continuation of the experiment is likely to result in injury, disability, or death to the experimental subject.

l. The established policy, which prohibits the use of prisoners of war in human experimentation, is continued and they will not be used under any circumstances.

3. The Secretaries of the Army, Navy and Air Force are authorized to conduct experiments in connection with the development of defenses of all types against atomic, biological and/or chemical warfare agents involving the use of human subjects within the limits prescribed above.

4. In each instance in which an experiment is proposed pursuant to this memorandum, the nature and purpose of the proposed experiment and the name of the person who will be in charge of such experiment shall be submitted for approval to the Secretary of the military department in which the proposed experiment is to be conducted. No such experiment shall be undertaken until such Secretary has approved in writing the experiment proposed, the person who will be in charge of conducting it, as well as informing the Secretary of Defense.

5. The addressees will be responsible for insuring compliance with the provisions of this memorandum within their respective Services.

/signed/
C.E. WILSON

Copies furnished:
Joint Chiefs of Staff
Research and Development Board

Downgraded to UNCLASSIFIED
22 Aug 75

TOP SECRET 3

FIGURE 3 WILSON MEMORANDUM TYPESET FROM ORIGINAL FOR LEGIBILITY

SECRETARY OF DEFENSE
Washington

26 Feb 1953

Memorandum for the SECRETARY OF THE ARMY
SECRETARY OF THE NAVY
SECRETARY OF THE AIR FORCE

SUBJECT: Use of Human Volunteers in Experimental Research

1. Based upon a recommendation of the Armed Forces Medical Policy Council, that human subjects be employed, under recognized safeguards, as the only feasible means for realistic evaluation and/or development of effective preventive measures of defense against atomic, biological or chemical agents, the policy set forth below will govern the use of human volunteers by the Department of Defense in experimental research in the fields of atomic, biological and/or chemical warfare.

2. By reason of the basic medical responsibility in connection with the development of defense of all types against atomic, biological and/or chemical warfare agents, Armed Services personnel and/or civilians on duty at installations engaged in such research shall be permitted to actively participate in all phases of the program, such participation shall be subject to the following conditions:

a. The voluntary consent of the human subject is absolutely essential.

(1) This means that the person involved should have legal capacity to give consent; should be so situated as to be able to exercise free power of choice, without the intervention of any element of force, fraud, deceit, duress, overreaching, or other ulterior form of constraint or coercion; and should have sufficient knowledge and comprehension of the elements of the subject matter involved as to enable him to make an understanding and enlightened decision. This latter element requires that before the acceptance of an affirmative decision by the experimental subject there should be made known to him the nature, duration, and purpose of the experiment; the method and means by which it is to be conducted; all inconveniences and hazards reasonably to be expected; and the effects upon his health or person which may possibly come from his participation in the experiment.

(2) The concept [sic: consent] of the human subject shall be in writing, his signature shall be affixed to a written instrument setting forth substantially the aforementioned requirements and shall be signed in the presence of at least one witness who shall attest to such signature in writing.

(a) In experiments where personnel from more than one Service are involved the Secretary of the Service which is exercising primary responsibility for conducting the experiment is designated to prepare such an instrument and coordinate it for use by all the Services having human volunteers involved in the experiment.

(3) The duty and responsibility for ascertaining the quality of the consent rests upon each individual who initiates, directs or engages in the experiment. It is a personal duty and responsibility which may not be delegated to another with impunity.

b. The experiment should be such as to yield fruitful results for the good of society, unprocurable by other methods or means of study, and not random and unnecessary in nature.

c. The number of volunteers used shall be kept at a minimum consistent with item b., above.

d. The experiment should be so designed and based on the results of animal experimentation and a knowledge of the natural history of the disease or other problem under study that the anticipated results will justify the performance of the experiment.

FIGURE 3 TYPESET WILSON MEMORANDUM (CONTINUED)

e. The experiment should be so conducted as to avoid all unnecessary physical and mental suffering and injury.

f. No experiment should be conducted where there is an a priori reason to believe that death or disabling injury will occur.

g. The degree of risk to be taken should never exceed that determined by the humanitarian importance of the problem to be solved by the experiment.

h. Proper preparation should be made and adequate facilities provided to protect the experimental subject against even remote possibilities of injury, disability, or death.

i. The experiment should be conducted only by scientifically qualified persons. The highest degree of skill and care should be required through all stages of the experiment of those who conduct or engage in the experiment.

j. During the course of the experiment the human subject should be at liberty to bring the experiment to an end if he has reached the physical or mental state where continuation of the experiment seems to him to be impossible.

k. During the course of the experiment the scientist in charge must be prepared to terminate the experiment at any stage, if he has probable cause to believe, in the exercise of the good faith, superior skill and careful judgment required of him that a continuation of the experiment is likely to result in injury, disability, or death to the experimental subject.

l. The established policy, which prohibits the use of prisoners of war in human experimentation, is continued and they will not be used under any circumstances.

3. The Secretaries of the Army, Navy and Air Force are authorized to conduct experiments in connection with the development of defenses of all types against atomic, biological and/or chemical warfare agents involving the use of human subjects within the limits prescribed above.

4. In each instance in which an experiment is proposed pursuant to this memorandum, the nature and purpose of the proposed experiment and the name of the person who will be in charge of such experiment shall be submitted for approval to the Secretary of the military department in which the proposed experiment is to be conducted. No such experiment shall be undertaken until such Secretary has approved in writing the experiment proposed, the person who will be in charge of conducting it, as well as informing the Secretary of Defense.

5. The addresses [sic] will be responsible for insuring compliance with the provisions of this memorandum within their respective Services.

/signed/
C. E. WILSON

Copies furnished:
Joint Chiefs of Staff
Research and Development Board

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22 Aug 75

The NEPA recommendation initiated an intra-DoD and inter-agency debate on whether human radiation experimentation was necessary. On 3 June 1949, two months after NEPA/MAC's meeting, the JPMAAW held its first meeting. The panel discussed the problem of human tolerance to radiation and the determination of maximum doses of radiation that the military would find acceptable. The panel stated that it was desirable and necessary for the national defense to pursue human experiments on the effects of total-body irradiation to psychologically and socially acceptable limits. The panel voted to table its decision pending the study of the NEPA report on the same subject. The panel also appointed a working group to study and report on the issue and make recommendations on conducting research involving human subjects.[6]

The JPMAAW met for the second time four months later on 7 October 1949. At that meeting, the working group presented the NEPA/MAC report on human experimentation. The full panel endorsed the NEPA/MAC recommendations, which included the AMA's three principles.[7] The panel then presented its recommendations to the CMS for approval. At its tenth meeting on 8 November 1949, the CMS endorsed the action of the JPMAAW.[8]

During the months following this tenth meeting, some members of the CMS learned that the Atomic Energy Commission's (AEC) Division of Biology and Medicine (DBM) did not favor human experimentation.[9] The AEC's concerns prompted the CMS to reconsider its endorsement. At its eleventh meeting on 1 February 1950, the committee revoked its previous endorsement and voted to refer the issue of human experimentation back to the JPMAAW for further consideration.[10] The panel immediately convened to reconsider its endorsement of the NEPA/MAC recommendations and appointed another working group to reformulate panel opinion on the subject. The next day, the working group submitted its report and the JPMAAW reaffirmed its position endorsing the use of human volunteers to conduct experimentation. The JPMAAW maintained that although the AEC's civilian charter might not indicate a need for human experimentation, DoD needed information on soldiers' capabilities and limitations on contaminated battlefields. Because other methods of obtaining these data were not useful, human studies were necessary.[11]

The CMS reconvened for its twelfth meeting on 23 May 1950 to review the JPMAAW reaffirmation of its original action. After deliberations, the committee passed the following motion:

> The Committee on Medical Sciences endorses the view that it is essential to obtain all necessary scientific information concerning radiation doses and the effect on man by all means of biological experimentation, as promptly as possible, including if necessary human experiments under established principles of such experiments.[12]

In addition, the NEPA/MAC recommendations received a firm endorsement from the Navy and a conditional endorsement from the Army. The Under Secretary of the Navy stated:

> (1). Accurate experimental data on the biological effects of known levels of radiation exposure in human subjects is essential for complete knowledge of the problems involved. (2). It is believed that the procedures proposed by the Chairman of the Subcommittee of the NEPA Medical Advisory Committee are sound from a research point of view.[13]

The Army recognized the need to determine radiation tolerances in humans but stated that such experimentation presented significant difficulties and dangers. In light of its reservations, Assistant Secretary of the Army Archibald S. Alexander recommended a more modest beginning than that proposed by the NEPA/MAC. He commented:

> Significant progress has been made in protecting animals against radiation injury by use of certain endocrine products or chemicals acting through the endocrine system. It is believed that these studies should be continued. When it appears that reliance can be placed upon these findings, one or two cancer patients, who must have intense radiation treatment for their condition, should be sought on

> a volunteer basis to undergo what appears to be, from animal experimentation, the probable maximum tolerance level for man. If these acute experiments prove successful, and the treatment methods as good as prior experimental results indicate, then it is recommended that consideration be given to establishing a significant experiment to validate the limits of human tolerance to radiation.[14]

In a 13 April 1950 memorandum, Air Force Surgeon General Harry G. Armstrong did not concur with the recommendations of the NEPA/MAC that the Armed Services arrange for experimentation on humans. He stated that radiation was not solely a military threat but had civilian repercussions as well. Because General Armstrong viewed radiation research as both a civilian and a military problem, he concluded that the AEC, whose interests encompassed civilian and military areas, should be the agency primarily responsible for any research program.[15]

In a memorandum dated 8 August 1950, the Director of Medical Services for the DoD, Richard L. Meiling, M.D., agreed with General Armstrong's assessment and stated the DoD position:

> The research program required to develop necessary scientific information concerning radiation doses involves both civilian and military problems. Hence, it is considered to be a problem for the Division of Biology and Medicine of the Atomic Energy Commission.[16]

However, at its sixth meeting held 31 October to 1 November 1950, the JPMAAW approved by a majority vote a motion to continue its efforts to secure approval for human research.[17]

Members of the Advisory Board of the DBM met on 10 November 1950 with representatives from the Surgeon General's offices of each branch of the military. During the meeting, Army Brigadier General James P. Cooney "proposed human experimentation on a group of 200 service volunteers to determine the effects of operational effectiveness to dosages of total body radiation within presumably low safe zones [sic]."[18] The proposal generated discussion among the board, which concluded "that human experimentation was not justified and that sufficient information could be obtained from animal experimentation and interpolation from clinical data."[19]

By the end of 1950, the DoD and the AEC agreed not to move forward with a human research program or detailed policy. Throughout 1951, the consensus remained that human research was not indicated at that time. M. C. Leverett, Technical Director of the NEPA project, announced the discontinuation of "efforts to obtain governmental approval for experiments on humans along the lines recommended by our [NEPA] Advisory Committee."[20]

The DoD funded some observational studies on patients who were receiving doses of radiation as part of a therapeutic procedure. Beginning in 1951, the Air Force funded post-treatment observational studies at the MD Anderson Hospital and Tumor Clinic of Houston, Texas. The Air Force provided funds for data collection on the physical symptoms of radiation sickness and the effects of radiation on psychomotor capabilities. Air Force funds were not used for radiation treatments or other patient care. In a description of the MD Anderson study before it began, the Air Force explained its involvement in the civilian programs in the following statement:

> It is desired to measure certain mental and psychomotor abilities of patients who are undergoing radiation therapy in order to evaluate any differences in performance that may result from radiation effects. This information is urgently required by the U.S. Air Force in connection with the NEPA Project. It is clear that before attempting to operate its proposed nuclear powered aircraft, the U.S. Air Force must evaluate its radiation hazards. There are no scientific data with which to assess these dangers of the NEPA aircraft in terms of their probable effects upon crew performance and well-being. The most direct approach to this information would be by human experimentation in specifically designed radiation studies; however, for several important reasons, this had been forbidden by top military authority. Since the need is pressing, it would appear

> mandatory to take advantage of investigation opportunities that exist in certain radiological centers by conducting special examinations and measures of patients who are undergoing radiation treatment for disease. While the flexibility of experimental design in a radiological clinic will necessarily be limited, the information that may be gained from the studies of patients is considered potentially invaluable; furthermore, this is currently the sole source of human data.[21]

(See chapter 2 for more information on the MD Anderson study.)

A belief in the necessity for guiding principles for these types of studies persisted. In a letter to Leslie M. Redman, Los Alamos Scientific Laboratory (LASL,) (now Los Alamos National Laboratory [LANL]), dated 5 March 1951, Shields Warren, M.D., Director of the DBM for the AEC, informed Mr. Redman of the guiding principles the AEC followed regarding human experimentation.

> We believe that no substances known to be, or suspected of being, poisonous or harmful should be given to human beings unless all of the following conditions be fully met: (a) that a reasonable hope exists that the administration of such a substance will improve the condition of the patient, (b) that the patient give his complete and informed consent in writing, and (c) that the responsible nearest of kin give in writing a similarly complete and informed consent, revocable at any time during the course of such treatment.[22]

This statement reflects the AEC's human subjects protection policy in 1951. As mentioned before, the DoD's decision in August 1950 to defer to the AEC on this matter made the AEC policy de facto DoD policy.

By early 1952, the JPMAAW and the CMS again reexamined the need for a human subjects protection policy. Although the original debate had been initiated by a perceived need to conduct biomedical research related to ionizing radiation, the major impetus in 1952 for developing the DoD's human subjects protection policy stemmed from the need to counter suspected Soviet advances in biological and chemical warfare. Intra-agency discussions during 1952 focused on writing a detailed human subjects protection policy. On 8 April 1952, the AFMPC, a DoD organization established in January 1951, requested that any directives or statements of policy issued to the branches of the military as guidelines using humans in studies be forwarded to the AFMPC for information and study.[23] The deliberations throughout 1952 provided the foundations and framework for a definitive DoD human subjects protection policy.

Many circulating internal DoD letters and memoranda referred to changes, additions, or suggestions for the proposed DoD human subjects protection policy. On 13 October 1952, Stephen S. Jackson, Counsel to the AFMPC, submitted a memorandum to the Director of the AFMPC, Melvin A. Casberg, M.D., recommending that the council adopt, as the DoD human subjects protection policy, the principles and conditions set forth in the Nuremberg Code (see box, "The Nuremberg Code," next page).[24] In addition, Mr. Jackson recommended the language, "Whereas prisoners incarcerated in penal institutions may and have been used if the required conditions are met, prisoners of war will not be used in human experimentation."[25] Mr. Jackson later amended this proposed language in a follow-up memorandum dated 4 December 1952, removing the first part of the sentence so it read, "Prisoners of war will not be used in human experimentation."[26]

In a 22 October 1952 memorandum to Dr. Casberg, Mr. Jackson passed along a recommendation from the Assistant Secretary of Defense for Manpower, Anna Rosenberg, "that a provision be added requiring that the consent be expressed in writing before at least one witness."[27] This language was approved by the OSD GC.

At a 30 - 31 October 1952 meeting, the CMS discussed the problem of human experimentation and appointed an ad hoc working group to study the merits of issuing a policy statement.[28] A memorandum dated 24 December 1952 from Dr. Casberg to the Secretary of Defense reported that the AFMPC recommended that a policy be established for using human volunteers in

The Nuremberg Code

1. The voluntary consent of the human subject is absolutely essential. This means that the person involved should have legal capacity to give consent; should be so situated as to be able to exercise free power of choice, without the intervention of any element of force, fraud, deceit, duress, overreaching, or other ulterior form of constraint or coercion; and should have sufficient knowledge and comprehension of the elements of the subject matter involved as to enable him to make an understanding and enlightened decision. The latter element requires that before the acceptance of an affirmative decision by the experimental subject there should be made known to him the nature, duration, and purpose of the experiment; the method and means by which it is to be conducted; all inconveniences and hazards reasonably to be expected; and the effects upon his health or person which may possibly come from his participation in the experiments. The duty and responsibility for ascertaining the quality of the consent rest upon each individual who initiates, directs or engages in the experiment. It is a personal duty and responsibility which may not be delegated to another with impunity.
2. The experiment should be such as to yield fruitful results for the good of society, unprocurable by other methods or means of study, and not random and unnecessary in nature.
3. The experiment should be so designed and based on the results of animal experimentation and a knowledge of the natural history of the disease or other problem under study that the anticipated results will justify the performance of the experiment.
4. The experiment should be so conducted as to avoid all unnecessary physical and mental suffering and injury.
5. No experiment should be conducted where there is an *a priori* reason to believe that death or disabling injury will occur; except, perhaps, in those experiments where the experimental physicians also serve as subjects.
6. The degree of risk to be taken should never exceed that determined by the humanitarian importance of the problem to be solved by the experiment.
7. Proper preparation should be made and adequate facilities provided to protect the experimental subject against even remote possibilities of injury, disability, or death.
8. The experiment should be conducted only by scientifically qualified persons. The highest degree of skill and care should be required through all stages of the experiment of those who conduct or engage in the experiment.
9. During the course of the experiment the human subject should be at liberty to bring the experiment to an end if he has reached the physical or mental state where continuation of the experiment seems to him to be impossible.
10. During the course of the experiment the scientist in charge must be prepared to terminate the experiment at any stage, if he has probable cause to believe, in the exercise of the good faith, superior skill, and careful judgment required of him, that a continuation of the experiment is likely to result in injury, disability, or death to the experimental subject.

experimental research. In addition, the AFMPC recommended "that the ten rules promulgated at the Nuremberg Trials be adopted as the guiding principles to be followed."[29] (For explanation of the Nuremberg Trials, see box, "The Nuremberg Trials," next page.) Dr. Casberg also included the statement regarding prisoners of war suggested by Mr. Jackson as part of the recommendation from AFMPC.[30]

Throughout 1952 and early 1953, the JPMAAW, the AFMPC, the CMS, and members of the GC's office drafted what would become the Wilson Memorandum. By the end of 1952, most of the deliberations on the use of humans in research had concluded, and recommendations were ready to be passed on to Secretary of Defense Robert Lovett for approval and distribution. However, 1952 was an election year and a new administration was about to take office in 1953. In light of the change in administration, final approval was delayed. The Director of the Executive Office of the OSD,

Col. G. V. Underwood, asked Dr. Casberg to hold the matter "for safe keeping with the understanding that at an appropriate time, after the installation of the new Administration, the matter will be brought up again."[31] The reasoning behind the delay was simply that the incoming Secretary of Defense would ultimately have responsibility for administering the policy.

The Wilson Memorandum

The new Secretary of Defense, Charles E. Wilson, signed a memorandum on 26 February 1953 that finally established a DoD human subjects protection policy.[32] This policy, based on the principles defined in the Nuremberg Code, required the written consent of the research subject and prohibited the use of prisoners of war in human experimentation. This policy applied to human volunteers only in the fields of atomic, biological, and chemical warfare research.

The Wilson Memorandum was classified Top Secret, which was consistent with other memoranda conveying information related to weapons of mass destruction. However, that classification limited its distribution. The memorandum was addressed only to the Secretaries of the three branches of the military, and copies were furnished to the Joint Chiefs of Staff (JCS) and the RDB.

Dissemination and Implementation of the Wilson Memorandum

Despite the restrictive classification attached to the memorandum, efforts were made to forward the information to other organizations within the DoD. In a memorandum dated 27 February 1953, just one day after Secretary Wilson issued the human subjects protection policy, Director of Administration for the RDB, Astrid Kraus, requested permission (which was denied) from the Director, Executive Office, OSD, to reproduce the Wilson Memorandum for five RDB committees directly concerned with the human subjects protection policy.[33] In addition, legal interpretations of the memorandum were requested on at least two occasions. At its eighteenth meeting on 26 - 27 February 1953, the CMS passed a motion requesting "the official legal interpretation of all the clauses of the document and the rationalization of apparent discrepancies."[34] On 16 April 1953, the Chief of Research and Development of the Army General Staff asked the Judge Advocate General's (JAG) office to express an opinion on the Wilson Memorandum.[35]

The Nuremberg Trials

As early as 1943 the United States, Great Britain, and the Soviet Union agreed that at the conclusion of World War II they would prosecute individuals who may have violated international law during the war. Shortly after the end of the war, representatives from the American, British, French, and Soviet governments established the International Military Tribunal in Nuremberg, Germany on 8 August 1945. The tribunal was composed of a panel of international judges; the purpose was to provide a forum for Allied prosecutors to present cases against German government and military officials and Nazi party members charged with wartime atrocities. The subsequent trials came to be known as the Nuremberg trials. A first set of trials ran from October 1945 to October 1946.

A second set of trials began on 9 December 1946. The first of these trials was officially called United States v. Karl Brandt et al., but was commonly referred to as "The Doctors' Trial," "The Medical Case," and the "Nuremberg Medical Trial." The prosecutors in this case charged that the defendants were responsible for murders, tortures, and other atrocities committed in the name of medical science.

At the conclusion of the case on 19 August 1947, the judges handed down, along with seven death sentences, a ruling that has come to be known as the Nuremberg Code. This code formally set standards, in practice at the time, governing the use of humans in medical experimentation. The Nuremberg Code also served as a starting point for DoD's human use policy.

Dissemination and implementation within the branches of the military fell to the individual branch Secretaries and thus varied from service to service. Within the Army, a 30 March 1953 memorandum from Lt. Gen. L. L. Lemnitzer, Deputy Chief of Staff for Plans and Research, to the Secretary of the Army indicated that the Wilson Memorandum had been distributed to the Chief of Research and Development, Office of the Chief of Staff; Deputy Chief of Research and Development, Office of the Chief of Staff; Deputy Assistant Chief of Staff, G-4, for Research and Development; Chief Chemical Officer; The Surgeon General; Assistant Chief, Research and Development Division; and Chairman, Medical Research and Development Board.[36] Furthermore, a memorandum dated 12 May 1953 from a biochemist at the Toxic Chemical Warfare branch of the Army Chemical Corps[37] indicated that the policies contained in the Wilson Memorandum had been disseminated down to the level of researchers.

By 30 March 1953, the Army proposed a draft directive designed to implement the Wilson Memorandum for Army-conducted human experimentation.[38] The draft policy received endorsements from the Army Surgeon General[39] and the Chief Chemical Officer.[40] By late April 1953, the Army JAG was reviewing the draft directive's legal implications.[41] On 20 May 1953, Secretary of the Army Robert Stevens approved the 30 March draft policy on using humans in experimental research in light of Secretary Wilson's 26 February directive. In addition, he "requested that the security classification of this subject be reviewed to determine if it cannot be downgraded" in an attempt to further disseminate Secretary Wilson's directive.[42]

Further clarification of the Army policy resulted from a 30 June 1953 Army Chief of Staff memorandum[43] and a 12 March 1954 Army Surgeon General memorandum.[44] Both documents raised the issue of whether Secretary Wilson's policy as implemented by the Secretary of the Army applied to contract research. Although the Army Surgeon General's memorandum stated that the human subjects protection policy was "to be used as far as applicable as a non-mandatory guide for planning and conducting contract research,"[45] neither document specifically stated that the policy applied as a mandatory policy to contractors.

As a result of inquiries by several Senate committees, the Secretary of the Army directed eighteen years later that research be conducted to determine the Army's role in hallucinogenic drug research. A portion of this report focused on the Army's implementation of its human use policy. This 1975 Army Inspector General's Report, "Use of Volunteers in Chemical Agent Research," suggested that Army implementation of the Wilson human use policy had been inconsistent.[46]

No documentation was located during the HRE review to verify distribution or implementation of the Wilson Memorandum within the Navy below the level of the Secretary of the Navy. However, by 1953, the Navy already had a long history of requiring Secretarial approval before conducting experiments with human subjects. For example, in 1932, the Secretary of the Navy approved a study using divers with the condition that the participants be informed volunteers, and by 1943, the Secretary of the Navy required that all research involving service personnel be approved by the Secretary.[47] By 1951, the Navy recorded its policy on human experimentation in the "Manual of the Medical Department." This policy required that:

> [e]xperimental studies of a medical nature involving persons in the Naval Establishment are forbidden except when the experimental design in each case has received the prior approval of the Secretary of the Navy. . . . Participation by personnel of the Naval Establishment (military and civilian) shall be on a voluntary basis only.[48]

In addition, the policy required the Bureau of Medicine and Surgery to review all studies before submission to the Secretary of the Navy.[49]

Within the Air Force, the policy was forwarded by 10 March 1953 to the Inspector General; Deputy Chief of Staff, Development; Director of Operations; Director of Plans; Deputy Chief of Staff, Personnel; and Deputy Chief of Staff, Materiel.[50] However, no other documentary evidence indicated further

distribution or implementation of the Wilson Memorandum.

Questions remain on whether DoD components directly involved with atomic issues, such as the Armed Forces Special Weapons Project (AFSWP) (predecessor to the Defense Special Weapons Agency [DSWA] and an organization that reported directly to the JCS), were notified of the Wilson Memorandum. AFSWP personnel were aware as early as November 1953 that a DoD human subjects protection policy had been established;[51] however, no indication is available that the policy was formally transmitted from OSD or implemented by AFSWP.

Evolution of Policies and Regulations

Each branch of the military began issuing its own policies and regulations to govern human experimentation as a result of increasing concern for protection of human research subjects.

Army. A formal Army Regulation (AR 70-25) was issued in 1962 and incorporated the policies set forth in the Wilson Memorandum. It applied to all types of research, not just research related to atomic, biological, and chemical warfare and specifically excluded clinical research. The following year, the Army issued a regulation for radioisotope use that required local institutions to appoint review committees. These review committees were required to obtain approval from the Secretary of the Army when radioisotopes were to be used with volunteer experimental subjects. Clinical investigations continued to be excluded from AR 70-25 until 1973 when the Army issued AR 40-38 which specifically applied to clinical investigations involving either patients or healthy subjects. The regulation restated the requirement for informed consent and required that clinical research be reviewed by a human use committee.

Navy. As noted earlier, the Navy had a history, before the Wilson Memorandum, of requiring informed consent and secretarial review of research projects. These policies were first recorded in the Navy Manual of the Medical Department in 1951. In 1967, a requirement for written consent, which did not distinguish between research on patients and research on healthy subjects, was added to the manual.[52] In 1969, two years later, the Secretary of the Navy issued a comprehensive policy that covered both groups and included a requirement for written informed consent from research subjects.[53]

In addition to the military departments, the Department of Health, Education and Welfare (DHEW), on 30 May 1974, published a comprehensive human subjects protection policy that provided a framework for subsequent human subjects protection policies for many Government agencies, including the DoD. The regulations required each institution requesting research funds from DHEW to form a committee to approve all research proposals before they were submitted. These committees came to be known as Institutional Review Boards (IRBs) and were responsible for ensuring the overall safety of the proposed projects and the adequacy of the informed consent obtained from each subject before participation in the project. In addition, the regulations defined the criteria for informed consent and detailed the procedures for obtaining informed consent. Although the regulations applied only to research funded by DHEW, the policy was an important step in the development of Federal standards for human subject research and provided the framework for current DoD human subjects protection policies. Following the adoption of this policy, other Government agencies began to develop their own human subjects protection policies using the DHEW policy as a foundation.

Air Force. Before the Wilson Memorandum, one of the early Air Force Regulations (AFR 80-22, dated 11 July 1952) required the officer conducting the research to provide justification for the investigation, background references, research design, and lines of authority; however, there was no mention of consent requirements. The regulation was revised in July 1956, September 1960, and January 1963. In April 1963, AFR 80-22 was superseded by AFR 169-6. In addition to the requirements in AFR 80-22, AFR 169-6 required the Surgeon General to approve all

clinical investigation protocols. By April 1968, a revision of AFR 169-6 created the Surgeon General's Clinical Investigation Committee and a review board for investigational drugs. Like AFR 80-22, AFR 169-6 did not mention informed consent. However, approximately two years later, in October 1965, a new regulation, AFR 169-8, stated that informed consent was absolutely essential and required in writing. The regulation further required that participants be informed of the study's nature, duration, purpose, methods, inconveniences, hazards, and effects on health. Moreover, AFR 169-8 directed the commander of the facility conducting the research to appoint a research committee. This research committee was charged with reviewing all human use protocols and recommending approval or disapproval. If the protocol received approval from the local research facility, it was then sent to the Surgeon General for approval before the investigation started. This regulation was revised in May 1968 and August 1974. In September 1976, AFR 169-8 was incorporated into AFR 169-6.

Current DoD Policy for Human Subjects Protection

The authority for oversight of human subjects protection within the DoD is established within the reporting chain of command. Title 32, Code of Federal Regulations, Part 219 (32 CFR 219), Federal Policy for the Protection of Human Subjects (the DoD version of the Federal "Common Rule," a copy of which is provided in appendix 2, exhibit 1), and Title 10, United States Code, Section 980 (10 U.S.C. 980) establish the fundamental regulatory requirements for human subjects protection. Execution of these regulations and written standards for performance are found in DoD Directive 3216.2, Protection of Human Subjects in DoD Supported Research, in DoD Guidance for the Assurance of Compliance with the Federal Policy for the Protection of Human Subjects,[54] and in the implementing regulations and instructions of the military departments and agencies.[55] Additionally, research involving a new drug or medical device in human subjects must comply with the regulations of the Food and Drug Administration.

Human subjects protection oversight within the DoD currently resides with the Director, Defense Research and Engineering (DDR&E), who develops policies in coordination with the Assistant Secretary of Defense (Health Affairs). Operational oversight has been delegated to the individual military departments or defense agencies through the Director, Environmental and Life Sciences of the office of DDR&E. Within the various service components or agencies, human subjects protection is implemented at biomedical research and development facilities and at medical treatment facilities conducting clinical investigations. With minor exceptions, both the biomedical research and development programs and clinical investigation efforts of the military departments come under the purview of each service's Surgeon General.

Clinical Investigations Programs

Primary responsibility for oversight of human medical research resides with each hospital commander whose facility sponsors a clinical investigation program. Oversight is exercised primarily through the Chief of the Department of Clinical Investigations at each major teaching hospital. These chiefs also use the deliberations and contributions of human use protection (IRBs), clinical investigations, radiation protection, pharmacy and therapeutics, and quality assurance committees. Independent medical monitors (health care providers qualified by training, experience, or both) are appointed for most studies that involve more than minimal risk to monitor human subjects during the research and to ensure the ongoing protection of human subjects involved in each project. An annual review of each human subjects research protocol is required. Also, each service conducts headquarters-level reviews of all clinical human subjects protocols involving more than minimal risk. Each service has a central office that provides human subjects protection oversight and

coordination among its hospitals that perform human subjects research. These central offices are as follows:

- ***Army.*** The Clinical Investigation Regulatory Office (CIRO), U.S. Army Medical Department Center and School, Fort Sam Houston, Texas

- ***Navy.*** The Clinical Investigations Program Office, Naval School of Health Sciences, Bethesda, Maryland

- ***Air Force.*** The Headquarters, Air Force Medical Operations Agency, Office of the Surgeon General (HQ AFMOA/SGOT), Bolling Air Force Base, Washington, D.C.

Biomedical Research and Development Programs

The commanding officers of the military biomedical laboratories or institutes are ultimately responsible for local institutional oversight. Commanders use several review committees to exercise their responsibilities regarding scientific integrity and protection of human subjects. The principal committees for protocol reviews are the scientific review committees and the human use review committees or IRBs. Independent medical monitors are appointed for each study that involves more than minimal risk:

- ***Army.*** The Human Use and Regulatory Affairs Division (HURAD) of the Office of the Deputy Chief of Staff for Regulatory Compliance and Quality, U.S. Army Medical Research and Materiel Command (USAMRMC), Fort Detrick, Maryland, exercises protocol review oversight for all human subjects research conducted by both uniformed and civilian Army personnel, as well as contractors.

- ***Navy.*** The Committee for the Protection of Human Subjects within the Naval Medical Research and Development Command (NMRDC), Bethesda, Maryland, exercises oversight for all human subjects research conducted by both uniformed and civilian Navy personnel, as well as contractors. The Office of Naval Research (ONR) also supports contracted research activities involving human subjects. Under authority of the Chief of Naval Research, the Head, Personnel Optimization and Biomolecular Science and Technology Department, is responsible for human subjects protection oversight.

- ***Air Force.*** Headquarters, Air Force Medical Operations Agency, Office of the Surgeon General (HQ AFMOA/SGOT), Bolling Air Force Base, Washington, D.C., is the central office that oversees human subjects protection at Air Force research and development facilities performing human subjects research.

- ***Uniformed Services University of the Health Sciences (USUHS).*** Within the USUHS, oversight for human subjects protection is the responsibility of the Dean, School of Medicine, and the Dean, Graduate School of Nursing. The USUHS Research Administration Office coordinates the oversight and review of human subjects research protocols by the USUHS IRB.

- ***Armed Forces Radiobiology Research Institute (AFRRI).*** The Director of AFRRI is ultimately responsible for all research activities conducted or sponsored by the Institute. AFRRI reports through the USUHS and therefore uses the USUHS oversight and review committees for research involving human subjects.

- ***Defense Special Weapons Agency (DSWA).*** Protocol review and project oversight occur through the appropriate office of the participating military service.

The functions of the various offices are conducted in accordance with requirements delineated in 32 CFR 219. The other offices described by the services or agencies function as the regulatory offices to ensure compliance with the requirements of the Federal Common Rule and other regulations and policy guidance. The headquarters-level oversight offices review, monitor, and inspect the programs under their authority. The various oversight offices ensure that accurate records of all research protocols (including study design), investigator credentials, approved informed consent forms, compliance and assurance documents, progress reports, and minutes of IRB or Human Subject Review Board (HSRB) transactions (including meeting minutes) are maintained. In addition, the oversight offices coordinate the collection and dissemination of information essential in conducting reviews of research protocols involving human subjects and serve as central locations for access to local, State, and Federal regulations and to directives and policies about research involving human subjects. The oversight offices also serve as the central point for information about program management and operations within their respective service or agency.

The services conduct announced and unannounced site visits to facilities to evaluate program management and to monitor compliance with regulations. Since 1993, the services have conducted more than 180 such visits by local or headquarters authorities of facilities conducting human subjects research. This number does not include all of the internal quality assurance committee monitoring programs or periodic administrative and record keeping audits that are conducted.

DoD policy and Federal regulations (32 CFR 219) require institutions, either foreign or domestic, that conduct human subjects research sponsored by the DoD components to hold an assurance of compliance with the human subjects protection regulations of the Department of Health and Human Services (DHHS) (45 CFR 46) or negotiate an equivalent assurance with the DoD component concerned. Accordingly, institutions with assurances of compliance must have one or more IRBs established and duly constituted under the provisions of the Federal Common Rule. Continuing reviews of research programs involving human subjects are vested in the IRBs and are conducted at intervals appropriate to the level of risk, but at least annually. Department-sponsoring components require that reports of the continuing reviews be filed with headquarters-level review boards for further inspection. Component sponsors also perform on-site reviews of selected grantee or contractor institutions; however, limited personnel and budgets do not allow on-site reviews of all extramural programs. All reviews, inspections, and site visits are documented. Permanent records of such inspections or reviews are maintained by the office conducting or sponsoring the inspection or review.

In its *Final Report*, the Advisory Committee on Human Radiation Experiments (ACHRE) listed a number of recommendations specifically directed to the protection of the rights and interests of human subjects in the future. The DoD will implement several of these recommendations through revision of its policy directives and the implementing regulations and instructions of the military departments and DoD agencies. Others are beyond the scope of DoD regulations and may require amendment of the Federal Common Rule or legislative action. Some deal with broad, overarching ethical considerations and will fall under the purview of the newly created National Bioethics Advisory Commission (NBAC).

Notes

(To obtain copies of the following documents, see appendix 2.)

1. Directive, Committee on Medical Sciences, 11 February 1948. This directive established the Committee on Medical Sciences as an agency of the Research and Development Board; Directive, Joint Panel on Medical Aspects of Atomic Warfare, 23 February 1949. This directive established the Joint Panel on Medical Aspects of Atomic Warfare as a joint agency of the Committee on Medical Sciences and the Committee on Atomic Energy; Directive for the Armed Forces Medical Policy Council, 2 January 1951. This directive established

the Armed Forces Medical Policy Council, which reported directly to the Secretary of Defense.

2. Minutes, Forty-Second Meeting of the Committee on Medical Research of the Office of Scientific Research and Development, 29 October 1942, p. 4.

3. Minutes, Second Meeting of the NEPA/MAC on Radiation Tolerance of Military Personnel, 3 April 1949, pp. 4–5.

4. Ibid, pp. 3–4.

5. Ibid, p. 4.

6. Minutes, First Meeting of the JPMAAW, 3 June 1949, p. 5.

7. Minutes, Second Meeting of the JPMAAW, 7 October 1949, p. 4.

8. Memorandum, from James E. McCormack, M.D., Executive Director, CMS, to Astrid Kraus, Director of Administration, RDB, Subject: "Problem of Experimentation with Human Volunteers," 25 July 1950, p. 2.

9. Letter, from Wallace O. Fenn, to Dr. James E. McCormack, Executive Director, Committee on Medical Sciences, 5 December 1949, and Letter, from Dr. James E. McCormack, Executive Director, Committee on Medical Sciences, to Dr. Joseph C. Aub, 7 December 1949.

10. Memorandum, from James E. McCormack, M.D., Executive Director, CMS, to Astrid Kraus, Director of Administration, RDB, Subject: "Problem of Experimentation with Human Volunteers," 25 July 1950, p. 2.

11. Minutes, Fourth Meeting of the JPMAAW, 16-17 February 1950, p. 5, Appendix C.

12. Memorandum, from James E. McCormack, M.D., "Problem of Experimentation with Human Volunteers," pp. 2-3.

13. Memorandum, from Under Secretary of the Navy, to the Secretary of Defense, 24 April 1950.

14. Memorandum, from Archibald S. Alexander, Assistant Secretary of the Army, to Director of Medical Services, Office of the Secretary of Defense, Subject: "Recommendation That the Armed Services Conduct Experiments on Human Subjects to Determine Effects of Radiation Exposure," 3 May 1950.

15. Memorandum, from Maj. Gen. Harry G. Armstrong, USAF, the Surgeon General, to General Powell, Subject: "Recommendation That the Armed Services Conduct Experiments on Human Subjects to Determine Effects of Radiation Exposure," 13 April 1950.

16. Memorandum, from Richard L. Meiling, M.D., Director of Medical Services, Office of the Secretary of Defense, to The Honorable Gordon E. Dean, Chairman of the AEC, 8 August 1950.

17. Minutes, Sixth Meeting of the JPMAAW, 31 October to 1 November 1950, p. 6.

18. Meeting summary for the Advisory Board of the AEC DBM, 10 November 1950, p. 2.

19. Ibid.

20. Letter, from M. C. Leverett, Technical Director, NEPA Project, to Shields Warren, M.D., Director of the AEC DBM, 15 February 1951, p. 1.

21. Project Specifications for "A Study of Intellectual, Perceptual, and Psychomotor Abilities of Patients Following Radio-Therapy," p. 1, Attached to Memorandum, from Lt. Lando Haddock, USAF, to Commanding General, Air Materiel Command, Wright-Patterson Air Force Base, Subject: "Negotiation of Cost Reimbursement Contract," 19 October 1950.

22. Letter, from Shields Warren, M.D., Director of the AEC DBM, to Leslie M. Redman, "D" Division, LANL, 5 March 1951, p. 1.

23. Memorandum, from Melvin A. Casberg, M.D., Chairman of the AFMPC, to Secretary of the Army, Secretary of the Navy, Secretary of the Air Force, and Chairman, CMS RDB, Subject: "Policy and Procedures in Connection with the Use of Human Beings as Subjects in Experimentation," 8 April 1952.

24. Memorandum, from Stephen S. Jackson, Counsel to the AFMPC, to Melvin A. Casberg, M.D., Subject: "The Standards and Requirements To Be Followed in Human Experimentation," 13 October 1952.

25. Ibid.

26. Memorandum, from Stephen S. Jackson, Counsel to the AFMPC, to Melvin A. Casberg, M.D., Chairman of the AFMPC, Subject: "The Standards and Requirements To Be Followed in Human Experimentation," 4 December 1952.

27. Memorandum, from Stephen S. Jackson, Counsel to the AFMPC, to Melvin A. Casberg, M.D., Chairman of the AFMPC, 22 October 1952.

28. Memorandum, from F. Lloyd Mussells, M.D., Executive Director of the CMS, to Dr. Floyd L. Miller, Vice Chairman of the CMS RDB, Subject: "Human Experimentation," 12 November 1952.

29. Memorandum, from Melvin A. Casberg, M.D., Chairman of the AFMPC, to the Secretary of Defense, Subject: "Use of Human Volunteers in Experimental Research," 24 December 1952.

30. Ibid.

31. Memorandum, from Col. G. V. Underwood, U.S. Army, Director, Executive Office of the OSD, to Melvin A. Casberg, M.D., Chairman of the AFMPC, Subject: "Use of Human Volunteers in Experimental Research," 9 January 1953.

32. Memorandum, from Secretary of Defense C. E. Wilson, to Secretary of the Army, Secretary of the Navy, Secretary of the Air Force, Subject: "Use of Human Volunteers in Experimental Research," 26 February 1953.

33. Memorandum, from Astrid Kraus, Director of Administration of the CMS RDB, to Director, Executive Office, OSD, 27 February 1953.

34. Memorandum, from Lowell T. Coggeshall, M.D., Chairman of the CMS, to Chairman, CMS RDB, Subject: "Human Experimentation," 12 March 1953.

35. Memorandum, from Col. R. B. Firehock, General Staff Assistant, to The JAG, U.S. Army, Subject: "Use of Volunteers in Research," 16 April 1953.

36. Memorandum, from Lt. Gen. L. L. Lemnitzer, General Staff, Deputy Chief of Staff for Plans and Research, to Secretary of the Army, Subject: "Use of Human Volunteers in Experimental Research," 30 March 1953, p. 1.

37. Memorandum, from E. S. Josephson, Biochemist, TCW Branch, Army Chemical Corps, to Chief, BW Branch, Army Chemical Corps, Subject: "Status of Use of Human Volunteers in TCW," 12 May 1953.

38. Memorandum, from Col. R. B. Firehock, General Staff Assistant, to Chief Chemical Officer, the Army Surgeon General, Subject: "Use of Volunteers in Experimental Research," 31 March 1953.

39. Memorandum, from Maj. Gen. George E. Armstrong, The Surgeon General, to Chief of Research and Development, Office of the Army Chief of Staff, Subject: "Use of Human Volunteers in Experimental Research," 9 April 1953.

40. Memorandum, from Col. Marshall Stubbs, Chemical Corps, Chief, Research and Development Division, to Chief of Staff, U.S. Army, Subject: "Use of Human Volunteers in Experimental Research," 10 April 1953.

41. Memorandum, from Col. R. B. Firehock, General Staff Assistant, to The JAG, U.S. Army, Subject: "Use of Volunteers in Research," 16 April 1953.

42. Memorandum, from Robert T. Stevens, Secretary of the Army, to Chief of Staff, U.S. Army, 20 May 1953.

43. Memorandum, from Brig. Gen. John C. Oakes, Secretary of the General Staff, to Chief Chemical Officer of the Surgeon General, Subject: "Use of Volunteers in Research," 30 June 1953.

44. Memorandum, from Army Surgeon General, Subject: "Use of Human Volunteers in Medical Research, Principles, Policies, and Rules of the Office of the Surgeon General," 12 March 1954.

45. Ibid, p. 1.

46. Army Inspector General Report, "Use of Volunteers in Chemical Agent Research," 1975.

47. Memorandum, from Frank Knox, Secretary of the Navy, to All Ships and Stations, Subject: "Unauthorized Medical Experimentation on Service Personnel," 7 April 1943.

48. Department of the Navy, Bureau of Medicine and Surgery, "Manual of the Medical Department," Section 4, Research Article 1-17, 26 September 1951, p. 2.

49. Ibid, p. 2.

50. Memorandum, from Col. Perry B. Griffith, USAF, Deputy Assistant for Atomic Energy, USAF, to Lt. Gen. B. L. Boatner, The Inspector General, Subject: "Use of Human Volunteers in Experimental Research," 10 March 1953.

51. Memorandum, For The Record, Attached to Memorandum, from Col. Irving L. Branch, USAF, Acting Chief of Staff, AFSWP, to Assistant Secretary of Defense (Health and Medicine), Subject: "Status of Human Volunteers in Bio-Medical Experimentation," 5 March 1954.

52. Department of the Navy, "Manual of the Medical Department," 20-8, Change 36, 7 March 1967.

53. Department of the Navy, SecNav Instruction 3900.39, 28 April 1969.

54. DoD Policy Memorandum, 10 June 1993.

55. AR 40-7, Use of Investigational Drugs and Devices in Humans and the Use of Schedule I Controlled Drug Substances; AR 40-38, Clinical Investigation Program; AR 70-25, Use of Volunteers as Subjects of Research; Secretary of the Navy Instruction 3900.39B, Protection of Human Subjects; HSETC Instruction 6000.41A, Clinical Investigation Program; AF Instruction 40-402, Using Human Subjects in Research, Development, Testing and Evaluation; AF Instruction 40-403, Clinical Investigation in Medical Research, Guidance and Procedures; AF Policy Directive 40-4, Clinical Investigations and Human Use in Medical Research.

CHAPTER 2

TOTAL-BODY & PARTIAL-BODY IRRADIATION STUDIES

TOTAL-BODY IRRADIATION TREATMENT FOR CANCER

Interest in radiation as a treatment for disease developed within the civilian medical community in the early part of this century. The effects of radiation observed by doctors and researchers provided valuable information on radiation's use as a treatment for different types of cancer. Early radiation research led to the development of two treatment methods known as total-body irradiation (TBI) and partial-body irradiation (PBI). Total-body irradiation, also known as whole-body irradiation, involves the use of external radiation sources to deliver a relatively uniform amount of radiation to the entire body. Partial-body irradiation delivers a relatively uniform amount of radiation to a specific part of the body.

In its initial uses, civilian doctors had more success with TBI in treating radiosensitive cancers (those that generally respond well to radiation treatments) than in treating radioresistant cancers. By the 1940s, therefore, TBI was considered an acceptable treatment for radiosensitive cancers, such as leukemia and lymphoma. The definition of which types of cancers were radioresistant was changing in the 1950s. Technological advances in equipment by the late 1950s caused researchers to reconsider TBI as a treatment to reduce the intensity of radioresistant cancers of the lung, breast, colon, and other organs. These later attempts to treat radioresistant cancers with TBI were reasonable because new sources could produce high-energy radiation. The availability of high-energy radiation sources (cobalt-60, cesium-137, and megavolt x-ray machines) allowed researchers to treat radioresistant cancers with TBI because "[t]hese new teletherapy units allowed high-energy radiation to penetrate deeper into the body without damaging the overlying skin and soft tissues; thus, higher ...doses could be delivered than with previous equipment."[1]

These high-energy treatments were initially unsuccessful. Due to bone marrow depression, patients were unable to tolerate the higher doses of radiation used. Bone marrow, the soft fatty tissue found in bone cavities, is the factory for red and white blood cells and platelets (blood particles that play a major role in blood clotting). Bone marrow depression can lead to potentially fatal complications, such as anemia and infection.

During the 1960s and 1970s, the development of bone marrow transfusions led researchers to try TBI and PBI again on radioresistant cancers. Bone marrow transfusion enabled patients to tolerate the higher doses of radiation needed to combat radioresistant cancers.

DEPARTMENT OF DEFENSE INTEREST IN TOTAL-BODY IRRADIATION RESEARCH

The relationship of the DoD with the civilian cancer research community began in the early 1950s. The DoD was interested in collecting data on the physical and psychological effects of radiation exposure. The DoD sought to (1) predict the hospitalization requirements and decrease in work capacity of soldiers who were exposed to radiation on a nuclear battlefield, (2) estimate the manifestations of radiation exposure on workers at nuclear weapons production facilities of the Atomic Energy Commission (AEC), (3) estimate the manifestations of radiation exposure on the general population in the event of a nuclear war.

The DoD funded post-treatment data collections and analyses during five clinical TBI projects between 1950 and 1972 that have been of recent

public interest. The DoD's interest in these projects was that information could be collected on the biological and psychological effects of TBI. This data collection included observing and recording the physical manifestations of post-irradiation syndrome or radiation sickness. Additionally, the DoD was looking for a biological dosimeter, or marker, to enable military doctors to estimate from a simple test (such as a test of body fluids) the radiation dose an individual received. The studies took place at the University of Texas MD Anderson Hospital and Tumor Clinic of Houston in Texas, Baylor University College of Medicine in Houston, Texas, the Sloan-Kettering Institute for Cancer Research in New York, the University of Cincinnati College of Medicine (UCCM) in Ohio, and the U.S. Naval Hospital in Bethesda, Maryland. This chapter discusses these five projects (see table 1).

"Systematic and Clinical Effects of Whole-Body X-Irradiation"

The University of Texas MD Anderson Hospital and Tumor Clinic of Houston

Background of Total Body Irradiation Research at MD Anderson Hospital

Between 1951 and 1956, the University of Texas MD Anderson Hospital and Tumor Clinic of Houston conducted studies involving TBI. The principal investigator was Gilbert Fletcher, M.D.

Shortly before this research began, during the late 1940s, the DoD and the United States Air Force (USAF) began investigating the possibility of developing a nuclear-powered aircraft, a program

Table 1 Chronological Listing of Total-Body Irradiation/Partial-Body Irradiation Studies Discussed in this Chapter

Human Radiation Experiment Title	Location	Dates	Number of Participants
Systematic and Clinical Effects of Whole-Body X-Irradiation	University of Texas, MD Anderson Hospital and Tumor Clinic, Houston, TX	1951-1956	263
The Effects of TBI and PBI on Iron Metabolism and Hematopoiesis	Baylor University College of Medicine, Houston, TX	1952-1964	112
The Study of the Post-Irradiation Syndrome in Humans	Sloan-Kettering Institute for Cancer Research, New York, NY	1954-1964	34
Radiation Effects in Man: Manifestations and Therapeutic Efforts	University of Cincinnati College of Medicine, Cincinnati, OH	1960-1972	88*
Use of Total-Body Radiation in the Treatment of Far-Advanced Malignancies	U.S. Naval Hospital, Bethesda, Bethesda, MD	1960-1961	17

* *"Radiation Effects in Man: Manifestations and Therapeutic Efforts," DNA 3024F, Report of 1 April 1971 through 31 March 1972, p. 1, states that 88 patients were irradiated in this program; however, the American College of Radiology and the UCCM Ad Hoc Committee Review reported that 106 patients were referred to the program but 24 dropped out, which indicated 6 fewer patients than listed in the Technical Report.*

commonly referred to as the Nuclear Energy for the Propulsion of Aircraft (NEPA) project. The Air Force was concerned about the potential adverse health effects on the crew of a nuclear-powered aircraft, and wanted:

> to determine the effects of exposures to ionizing radiation upon one's ability to perform simple and complex mental and psychomotor tasks in order to predict the effects upon the crew operating the NEPA aircraft.[2]

Therefore, in 1951, the Air Force School of Aviation Medicine (SAM) issued contract AF-18 (600)-926 to MD Anderson Hospital, which remained in effect until 1956.

This Air Force contract funded post-treatment data collection on (1) the effects of ionizing radiation, including documenting the physical symptoms of radiation sickness, and (2) the effects of radiation on psychomotor capabilities (the relationship between mental processes and muscular activities).

TERMS USED IN THIS CHAPTER

amino aciduria	excretion of amino acids in the urine
bone marrow	the tissue found in bone cavities, the factory for red and white blood cells and platelets
bone marrow depletion/ depression/failure	failure to produce the normal amount of blood cells or overproduction of only certain blood cells
carcinoma	any malignant tumor arising from cells in the lining membrane of a body organ (includes most cancers of the lungs, breast, stomach, skin, and cervix)
cobalt-60	a radioactive isotope used in the treatment of cancer
hematologic	of the blood and its diseases
irradiate/irradiation	to treat by exposing to x-rays, ultraviolet rays, radium, or some other form of radiant energy
palliative	providing relief but not cure
platelet	cells associated with the process of blood clotting
post-irradiation sickness	(radiation sickness) sickness produced by overexposure to radiation, characterized by nausea, diarrhea, bleeding, loss of hair, and increased susceptibility to infection
rad	a unit of absorbed dose of ionizing radiation; acronym for *r*adiation *a*bsorbed *d*ose
red blood cells	blood cells that carry oxygen to the body tissues
white blood cells	cells important in the body's defenses against infection
World War II	1939-1945, fought between the Allies (Great Britain, France, the Soviet Union, Canada, and the United States as well as other nations) and the Axis (Germany, Italy, Japan, and other countries)

Research Goals

Observational research on the potential effects of radiation exposure to aircrews operating a nuclear-powered aircraft was performed in conjunction with MD Anderson Hospital's ongoing clinical study comparing the value of radiotherapy and chemotherapy for treating generalized cancer. In addition to investigating TBI as a treatment for cancer, the researchers attempted to determine the effects of ionizing radiation exposures on one's ability to perform simple and complex mental and psychomotor tasks and to develop a biological marker that would quantify or reveal the level of radiation exposure an individual had received.[3]

Patients and Treatments

A total of 263 patients participated in this research. All of the participants were patients at MD Anderson Hospital. Patients were assigned to TBI treatment levels according to the severity of their disease.[4]

Exposure to Total-Body Irradiation

Exposure to TBI as a treatment for cancer was divided into two phases. The first phase comprised 233 patients exposed to doses ranging from 15 to 200 roentgen (R). The radiation source was a 250 kVp General Electric Maxitron.[5] Patients received either single doses or a series of small repeated doses. This segment of the participants was further subdivided into three groups. The second phase involved a series of thirty patients who received single doses of 200 R (see table 2).[6]

Psychomotor Tests

Psychomotor tests were initiated in 1951 to chart the effects of low-level ionizing radiation on some of the psychomotor capabilities needed to operate aircraft.[7] Participants for these tests were selected from the 263 patients receiving TBI treatments for cancer. The psychomotor testing was divided into two studies:

> The first study was concerned with the question of whether a given air dose would have a greater effect when delivered in a single exposure than when delivered in a series of fractionated exposures. The second study was organized as a straightforward dose-response study extending to relatively high exposure levels.[8]

In the first study, participants were adult males in advanced stages of cancer not correctable by surgery or localized radiation therapy. Ages for this study ranged between nineteen and seventy-six years. Participants in this study had been treated with either single or small repeated doses of radiation.[9] Participants in the second study were adult males ranging in age from twenty-three to seventy-six and were in advanced stages of cancer. These participants had been treated with single doses of radiation only.[10]

Psychomotor capabilities were tested using three perceptual-motor tasks. These tests evaluated basic skills necessary to operate aircraft and had been used

TABLE 2 EXPOSURE TO TBI AS A TREATMENT FOR CANCER, MD ANDERSON HOSPITAL

	Participants (Hospital Patients with Cancer)	Exposure (in Roentgen)
Phase I (233 patients)		
Group I	199	15 R to 75 R
Group II	18	100 R
Group III	17	125 R, 150 R, 175 R, 200 R
Phase II (30 patients)		
	30	200 R (single doses only)

Source: Lowell S. Miller, M. D., Gilbert H. Fletcher, M. D., and Herbert B. Gerstner, M. D., "Systematic and Clinical Effects Induced in 263 Cancer Patients by Whole-Body X-Irradiation with Nominal Air Doses of 15 to 200 R" (USAF Randolph AFB, Texas: Air University School of Aviation Medicine, May 1957), pp. 16-17. This report provided an unexplained discrepancy regarding the number of participants. The report indicated that Phase I comprised 233 patients. However, the breakdown into three groups for this phase totaled 234 (i.e., Group I 199, Group II 18, Group III 17).

to select aviation cadets during World War II.[11] The tests were administered to participants before and after receiving radiation to measure whether the treatments would cause these skills to deteriorate. The Air Force SAM Complex Coordination Test required participants to coordinate movement of a stick and rudder bar to match the position of three red lights and three green lights. The Air Force SAM Two-Hand Coordination Test required participants to operate two crank handles to keep a cursor positioned on a moving target. The Air Force SAM Rotary Pursuit Test required participants to follow a rotating target with the tip of a stylus.[12]

Acronyms Used in This Chapter

ACHRE	Advisory Committee on Human Radiation Experiments
ACR	American College of Radiology
AFIP	Armed Forces Institute of Pathology
AFMPC	Armed Forces Medical Policy Council
AFSWP	Armed Forces Special Weapons Project
DASA	Defense Atomic Support Agency
DoD	Department of Defense
GAO	General Accounting Office
kVp	peak kilovolts
JPMAAW	Joint Panel on the Medical Aspects of Atomic Warfare
NEPA	Nuclear Energy for the Propulsion of Aircraft
PBI	partial-body irradiation
R	roentgen; unit of exposure used in measuring ionizing radiation
REM	acronym for roentgen equivalent man; a unit of dose, taking into account the biological effectiveness of the radiation type
SAM	(Air Force) School of Aviation Medicine
TBI	total-body irradiation
UCCM	University of Cincinnati College of Medicine
USAF	United States Air Force

Research Results

The use of TBI as a treatment for radioresistant cancer showed some limited successes. For some patients, 200 R of total-body irradiation produced definite, although temporary, symptomatic relief from their cancer. In a number of other cases, the researchers reported additional improvements in patient conditions.[13]

The investigators also reported on the physical effects (typically referred to as radiation sickness) of TBI treatments. Their report stated:

> These effects—predominantly nausea, vomiting, and bone-marrow depression—were practically absent below 100 R. They became noticeable between 125 R and 175 R, and developed into complications requiring treatment in 10 percent of the patients at 200 R.[14]

In the first study, the data collected did not provide any evidence that TBI treatments affected psychomotor performance; radiation treatments did not alter performance on any of the psychomotor tests.[15] Results for the second study were slightly different. There was no evidence from the Two-Hand Coordination and Rotary Pursuit tests that exposure to ionizing radiation affected psychomotor skills. However, performance on the Complex Coordination test decreased after radiation treatments. Although this result may have indicated radiation exposure to have an impact on performance, the investigators noted that the decrease in performance could have been an effect of the disease rather than an effect of radiation or a combination of both. Researchers also

noted that the decrease in performance was slight, and because the decrease was so small, the result may have been of little significance.[16]

"The Effects of TBI and PBI on Iron Metabolism and Hematopoiesis"

Baylor University College of Medicine, Houston, Texas

Background of Total Body Irradiation Research at Baylor University College of Medicine

From December 1952 until January 1964, researchers at Baylor University in conjunction with the Texas Medical Center and Jefferson Davis Hospital in Houston conducted TBI research. The DoD's interest in this project was the information collected on the biological and psychological effects of TBI. The principal investigator for the project was Vincent P. Collins, M.D.

The DoD realized that the use of nuclear weapons could generate a background of continuous radiation in which people would have to live, work, and fight. Because of this possibility, there was a need to know what "a chronic low dosage of ionizing radiation would do to immunity, blood coagulation, wound healing, infection, nutrition . . . in combat or similar casualties."[17]

In December 1952, a Baylor University project proposal was reviewed and approved by the following organizations: Armed Forces Special Weapons Project (AFSWP), Armed Forces Medical Policy Council (AFMPC), Joint Panel on the Medical Aspects of Atomic Warfare (JPMAAW), and the Armed Forces Institute of Pathology (AFIP). Three contracts were issued over the study's twelve-year period. The first two contracts (DA-49-007-MD-302 and DA-49-007-MD-428) were issued by AFSWP. As part of a 1959 reorganization, AFSWP was redesignated the Defense Atomic Support Agency (DASA), which issued the contract (DA-49-146-XZ-032).

Research Goals

The primary purpose of this investigation was to define and quantify the therapeutic effects of TBI as a treatment for cancer. Initially, the therapeutic aspects and biologic effects of TBI in single doses up to 200 R were the principal objectives of the study. As the research progressed, the investigators expanded their attention to include therapeutic effects of lower doses of radiation over time. From 1956 (four years into the project) through the end of the study, the researchers were not only concerned with the effects of single doses that were well within accepted human tolerance limits but also with the cumulative effects of repeated small doses administered over time.[18] The part of the study involving small repeated doses had the potential to answer some of the questions the DoD had regarding backgrounds of continuous radiation in the event of a nuclear war.

In addition to investigating the therapeutic effects of TBI, researchers at Baylor University sought to establish a predictable relation between radiation exposure and biologic response. More specifically, the researchers focused on identifying enzyme systems in circulating red blood cells to establish a biologic marker of radiation exposure.[19] Information obtained from this research also had the potential to benefit the DoD in developing a simple enzyme test that could determine the amount of radiation an individual had received. This would assist DoD personnel in identifying and treating people following exposure to radiation.

Patients and Treatment

A total of 112 patients participated in this project. All of the participants were adults with widespread or advanced cancer. Follow-up continued for as long as the patient's condition permitted. From the beginning of the project until February 1956, the majority of patients received TBI from conventional 250 kVp therapy equipment, and following this

period, researchers used a 2 million electron volt (MeV) Van de Graaff x-ray generator.[20]

Participants, who received TBI for the treatment of advanced cancer, were divided into three groups. Group I received single exposures of 25 to 250 R. There were seventy-one individuals, or 63 percent of the patients, in this group. Group II received protracted irradiation (small repeated exposures) ranging from 25 to 545 R total exposure over a period ranging from two to sixty-three days (e.g., one patient received 545 R total exposure spread over eighteen days, or approximately 30 R per day for eighteen days). There were thirty-four individuals, or 31 percent of the patients, in this group. It was expected that studies of this group would result in information that might be useful among military personnel when occupying a radioactive area. Group III received repeated courses of treatment over several months or, in some cases, several years. This group consisted of seven individuals, or 6 percent of the patients, who initially received either single or repeated exposures and, after months or years of remission, developed recurrent symptoms requiring further TBI treatments. Exposures ranged between 170 R and 500 R total exposure spread over four to forty-two months (e.g., one patient initially received 100 R spread over seven days and twenty-five months later returned to receive 100 R spread over six days).[21]

Research Results

Although many of the cancer patients referred to the project were terminally ill, positive response to TBI therapy for some was reflected by decreased node size and decreased drug requirements for pain control.[22] "In some instances, response was dramatic; a few completely bedridden patients became ambulatory and several experienced long-term remission," the report stated.[23] In addition, the study of all patients who developed symptoms of radiation sickness following therapeutic TBI indicated that, for levels up to 200 R in single or repeated exposures, radiation sickness may be avoided by proper health care management.[24] The researchers concluded from these observations that with factual information regarding the effects of radiation exposure, normal, healthy individuals could tolerate even higher exposures without undue incapacitation.[25]

The researchers also reported the results of supplementary bone marrow studies. Developed first in animals, techniques for removal, processing, storage, and reinfusion of bone marrow were quickly adopted for use with humans.[26] However, despite all the successes and data available from hematologic studies, a definite relationship between the amount of radiation and biological response was not established, and a biological marker was not found.[27]

"The Study of the Post-Irradiation Syndrome in Humans"

Sloan-Kettering Institute for Cancer Research

Background of Total-Body Irradiation Research at Sloan-Kettering Institute for Cancer Research

From June 1954 until January 1964, researchers at the Sloan-Kettering Institute for Cancer Research in New York conducted TBI research. The principal investigator was J. J. Nickson, M.D.

The project used TBI as a treatment method for cancer. Information was also collected on clinical observations, hematologic parameters, plasma protein distribution, urine excretion, and electroencephalograms (electrical activity of the brain).[28] Several contracts were issued throughout the project. The AFSWP funded the results of the program from 1954 to 1959. AFSWP contracts included DA-49-007-MD-533; DA-49-007-MD-669; DA-49-007-MD-910; and DA-49-007-MD-1022. The final contract, DA-49-146-XZ-037, was issued under DASA in July 1959 and lasted until January 1964. The project was monitored by the Office of the Army Surgeon General.

Patients and Treatment

A total of thirty-four patients participated in this project. The participants were patients at the Sloan-Kettering Institute for Cancer Research and were selected because they had widespread cancer that was resistant to medical procedures at the time. Throughout the ten years of the study, twenty-two patients received TBI, and twelve received radiation to the head for treatment of tumors. The radiation source was a 2 MeV Van de Graaff x-ray generator. Exposures ranged from 50 to 150 R for TBI and up to 4,000 R for localized cancers. Clinical follow-up continued up to approximately seventy-five days after exposure to radiation.[29] Ages ranged from nineteen to sixty-three years, with an average age of forty-seven years. Existing documents identified the participants by initials, types of cancer, and, in some cases, by age and sex.[30]

Research Results

Several patients experienced regression of their disease and changes in the abnormal growth of new tissue.[31] The investigators found hematologic changes to be the most consistent biological marker of radiation exposure. Investigators noted that these changes showed variable decreases in white blood cell counts and platelet counts after exposure to radiation. In some cases, the investigators compared post-irradiation counts with the patient's own pre-irradiation counts. Those comparisons led the investigators to conclude that multiple exposures (e.g., three treatments at 30 R) produced a more severe depression of white blood cells and platelets than comparable total dose delivered at one exposure. The researchers also conducted urine studies in an attempt to locate other biological indicators of radiation exposure. They reported that urinary excretion of creatine, creatinine, and pentose appeared to increase as the radiation dose increased.[32] The investigators did not report any definitive conclusions on the post-irradiation syndrome in humans.

"Radiation Effects in Man: Manifestations and Therapeutic Efforts"

University of Cincinnati College of Medicine

Background of Total-Body Irradiation Research at the University of Cincinnati College of Medicine

The research at the University of Cincinnati College of Medicine (UCCM) examined the effectiveness of using new, deep-penetrating TBI technology to improve the treatment of patients with advanced cancer. During the 1950s and 1960s, the DoD sought information on the biological and clinical features of radiation injury. The DoD funded laboratory studies and psychological tests of cancer patients after they had received TBI and PBI as treatment for their disease. The DoD's initial objective was to obtain a biological marker of radiation exposure. After 1965, the DoD was also interested in obtaining data on the psychological response to radiation exposure.

Eugene L. Saenger, M.D., a physician in the Department of Radiology at UCCM who later became principal investigator for the research, submitted an unsolicited research application in September 1958 to the Research and Development Division of the Office of the Army Surgeon General.[33] Over the next one and a half years, Army Medical Corps officers reviewed the proposal and recommended approval of the contract application.[34] By October 1959, DASA began negotiating a contract with the University of Cincinnati for the study of the metabolic changes in humans following TBI.[35]

On 1 January 1960, DASA awarded contract DA-49-146-XZ-029 to the University of Cincinnati.[36] This contract, with supplements and modifications, remained in effect through February 1964. On 1 June 1964, the second contract (DA-49-146-XZ-315) was awarded and remained active until April 1969.[37] On 15 June 1969, DASA awarded the third and final contract, DASA-01-69-C-0131, which remained in effect until March 1972.[38] The

project was terminated at the completion of the third contract, and the University of Cincinnati declined to initiate a new contract.[39]

Patients and Treatments

A total of eighty-eight[40] patients from Cincinnati General Hospital participated in this project. Patient selection criteria required that only individuals with proven metastatic or far-advanced cancer be selected for the studies. In addition, subjects had to be in relatively good nutritional status and, in most cases, have normal hematologic values. These criteria remained relatively constant throughout the twelve years of the study. UCCM researchers also sought patients who had not undergone previous radiation or chemotherapy, had normal kidney function and new, abnormal tissue growth that was not radiosensitive, and were without lymphoma or bronchogenic cancer.[41]

According to a 1972 University of Cincinnati review of the project, the majority of the patients treated in this study were African-American. Most of the patients treated were indigent. Some of the patients had relatively low intelligence quotients. The demographic distribution of study participants reflected the patient population of the Cincinnati General Hospital.[42] All patients received either single or multiple exposures of therapeutic radiation from a cobalt-60 teletherapy unit. Doses ranged from as low as 16 rads in the first year of research to as high as 300 rads in the later years.

Research Results

UCCM researchers determined that TBI and PBI therapies were effective in controlling certain advanced cancers. They reported that the relief effects of radiation treatments compared favorably with results using anticancer drugs or chemotherapy.[43] Delivery of higher radiation doses caused patients to experience blood problems, which included loss of red and white blood cells and platelets. Doctors infused bone marrow early in the post-irradiation period, hoping to prevent these problems. In May 1963, researchers in this project proposed establishing facilities for the withdrawal, storage, and reinfusion of bone marrow.[44] By April 1966, a filtration system for the reinfusion of human bone marrow was completed,[45] and by April 1969, success in bone marrow reinfusion was achieved.[46] The use of this process immediately after radiation therapy minimized the characteristic bone marrow depression associated with higher doses of radiation. The degree of illness following reinfusion was significantly decreased and hospitalization greatly shortened.[47]

No success was achieved in the search for a biological marker for radiation exposure. By 1963, the researchers concluded that the elevation of amino acids in urine was nonspecific and not solely characteristic of irradiation. The researchers then began to investigate breakdown products of deoxyribonucleic acid (DNA). Deoxycytidine was one such product that showed elevated levels after irradiation.[48] However, researchers discovered that the presence of elevated levels of this product in urine could have been caused either by radiation or from other sources, such as burns.[49] When the study was discontinued in 1972, the researchers were attempting to develop a means to differentiate between elevated levels of deoxycytidine created by irradiation and elevated levels of deoxycytidine created by other sources.

Psychological Studies

Psychological studies of the patients in the UCCM project began in 1965.[50] The DoD's objective was to determine the effect of radiation exposure on emotional and intellectual functioning. The tests were designed to take into account the many complex variables that may influence the measurement of these functions after radiation treatment. The tests included the Reitan Trials Test, Cattell's 16 Personality Factor Test, Wechsler Depression Rating Scale, Wechsler Adult Intelligence Scale, and the five-minute verbal content test of Gottschalk and Gleser. The researchers found

evidence of a decrease in intellectual functioning immediately after radiation. This effect was temporary, and functioning improved markedly within three days. Those with higher intelligence quotients showed less of a decrease than those with lower intelligence quotients.[51]

UCCM Review Processes

During its course, the UCCM project came under intense scrutiny from groups inside the University of Cincinnati and from outside organizations (see table 3).

In November 1971, Senator Mike Gravel of Alaska requested that the American College of Radiology (ACR) evaluate the UCCM project.[52] In January 1972, the ACR responded to Senator Gravel's request. The ACR reviewed the science, methodology, and design of the project from a medical point of view to determine if the project conformed to then-contemporary standards for clinical investigations. The ACR report concluded that the UCCM project was validly conceived, stated, executed, controlled, and followed up; the process of patient selection conformed with sound medical practice; and procedures for obtaining patient consent were valid, thorough, and consistent with National Institutes of Health recommendations and the practices of most cancer centers.[53]

Also in November 1971, Clifford Grulee, M.D., Dean of the University of Cincinnati College of Medicine, appointed an Ad Hoc Committee made up of members of the UCCM faculty to review the project. Dr. Grulee asked the committee to review the project's scientific content, methodology, and data treatment.[54] The committee's report, released in January 1972, indicated that there were no problems with the project's scientific content or methodology. In addition, the committee stated that there was no evidence that DASA funding was made contingent on work, ideas, or suggestions proposed by DASA and all information reported to DASA was kept unclassified and publicly available.[55]

Immediately following the release of the Ad Hoc Committee report in January 1972, three members of the UCCM Junior Faculty Association released "A Report to the Campus Community." This report was highly critical of the research and urged the cancellation of the project.[56]

"Use of Total-Body Radiation in the Treatment of Far-Advanced Malignancies"

U.S. Naval Hospital, National Naval Medical Center, Bethesda, Maryland

Background of Total Body Irradiation Research at the U.S. Naval Hospital, Bethesda, Maryland

Between 1960 and 1961, the United States Navy sponsored and performed a TBI study at the U.S.

Table 3 Scientific and Ethical Reviews of the UCCM Project

Organization	Dates
1. UCCM and DoD contract officers	1958-1972 (ongoing throughout project)
2. American College of Radiology	November 1971-January 1972
3. University of Cincinnati College of Medicine Ad Hoc Committee	November 1971-January 1972
4. General Accounting Office	December 1971-May 1972
5. University of Cincinnati Junior Faculty Association	January 1972

Naval Hospital, National Naval Medical Center in Bethesda, Maryland. The military purpose was to establish a biological marker for exposure to radiation by tracking the excretion of amino acids following TBI treatments. The primary researcher for this investigation was Chief of Radiology at the U.S. Naval Hospital, CAPT E. Richard King, Medical Corps, USN.

Patients and Treatment

There were seventeen patients from the U.S. Naval Hospital, Bethesda, Maryland, participating in the project. All were hospitalized due to advanced cancer and "had received conventional radiation therapy or chemotherapy, or both, in addition to some form of surgery."[57] To administer TBI to the patients, the doctors at the Naval Hospital arranged to use the cobalt-60 source located at the Naval Medical Research Institute, a separate facility located on the same site as the Naval Hospital.

Patients were divided into two groups. Each patient in the first group (eleven patients) was treated with a single dose of TBI. Each patient in the second group (six patients) was treated with several smaller doses of TBI. For those patients who received single doses of TBI, exposures ranged between 225 R and 1,500 R. For those patients who received multiple doses, total exposures ranged between 200 R and 600 R. These multiple exposures were delivered over a period of time ranging between two and sixteen days. Five of the six patients in this group received treatments in increments of 100 R per treatment, while the sixth patient received treatments in increments of 25 R. Patients in both groups consisted of men, women, and children.[58]

Research Results

The researchers reported that the results of treatments with TBI were encouraging. TBI therapy in a dose range of between 100 and 400 R appeared to offer relatively safe and reasonably effective relief therapy for advanced radiosensitive cancers. If the patient's bone marrow did not appear to be affected by the disease, a portion could be removed for reinfusion following treatment. These bone marrow reinfusions enabled researchers to safely expose patients to larger doses of TBI with only temporary marrow depression.[59] All six patients treated with small multiple exposures experienced marked relief of generalized pain and decreases in the size of cancer lesions. The results from the single exposure group were more varied, although four of the eleven experienced some relief from generalized pain and disease. However, the results did not indicate to the researchers that small repeated exposures were more effective in treating cancer than a large single dose because differences in dose delivery were based on each patient's clinical status.[60]

In addition to examining TBI as a treatment for cancer, patients' urine was collected and studies were performed on the urinary excretion of amino acids (such as taurine) following TBI treatments in an attempt to establish a biological marker for exposure to radiation. Although the results from these tests suggested that, at exposure levels of 450 R or greater, urinary excretion of taurine increased, the researchers reported, "However, there appears to be no direct correlation between the dose of radiation and the amount of taurine excreted."[61] The source of the increased taurine was unknown, and the researchers noted the need for further studies to determine that source.

Summary

TBI continues to be used today. The Advisory Committee on Human Radiation Experiments (ACHRE) *Final Report* states:

> Since the 1980s, TBI has again been used to treat certain widely disseminated, radioresistant carcinomas at doses as high as 1,575 rads in conjunction with effective bone marrow transplantation, which became routinely available in the late 1970s.[62]

The DoD awarded contracts involving five TBI projects between 1950 and 1972 that have been of

recent public interest. All five TBI projects used TBI as a treatment method for cancer. The DoD's interest in these projects was the information collected on the biological and psychological effects of TBI. This secondary objective included observing and recording the physical manifestations of post-irradiation syndrome or radiation sickness. Additionally, the researchers were looking for a biological dosimeter or marker to enable military doctors to detect, with a simple test (such as a test of body fluids), the radiation dose an individual received.

Notes

(To obtain copies of the following documents, see appendix 2.)

1. Advisory Committee on Human Radiation Experiments, *Final Report* (Washington, D.C.: U.S. Government Printing Office, October 1995), p. 370.

2. Project Specifications for "A Study of Intellectual, Perceptual, and Psychomotor Abilities of Patients Following Radio-Therapy," p. 1, attached to Memorandum, from Lt. Lando Haddock, USAF, to Commanding General, Air Materiel Command, Wright-Patterson Air Force Base, Subject: "Negotiation of Cost Reimbursement Contract," 19 October 1950.

3. Research proposal for contract extension, "A Study of Intellectual, Perceptual, Psychomotor and Biomedical Status of Patients Following Exposures to Moderate Quantities of Ionizing Radiation," 27 January 1954.

4. Technical Report, Col. Robert B. Payne, Medical Service Corps, USAF, "Effects of Acute Radiation Exposure on Human Performance" (Brooks Air Force Base, Tex.: USAF School of Aerospace Medicine Aerospace Medical Division (AFSC), February 1963), p. 3.

5. Technical Report, Lowell S. Miller, M.D., Gilbert H. Fletcher, M.D., and Herbert B. Gerstner, M.D., "Systematic and Clinical Effects Induced in 263 Cancer Patients by Whole-Body X-Irradiation with Nominal Air Doses of 15 to 200 R" (USAF Randolph AFB, Tex.: Air University School of Aviation Medicine, May 1957), p. 2.

6. Ibid, p. 5.

7. Technical Report, Col. Robert B. Payne, "Effects of Acute Radiation Exposure on Human Performance," p. 3.

8. Ibid, p. 4.

9. Ibid.

10. Ibid, pp. 9 - 10.

11. Ibid, pp. 4–5.

12. Ibid, p. 4.

13. Technical Report, Lowell S. Miller, Gilbert Fletcher, and Herbert B. Gerstner, "Systematic and Clinical Effects Induced," p. 7.

14. Ibid, p. 20.

15. Technical Report, Lt. Col. Robert B. Payne, Medical Service Corps, USAF, "Effects of Ionizing Radiation Upon Human Psychomotor Skills" (USAF Randolph AFB, Tex.: Air University School of Aviation Medicine, December 1958), p. 6.

16. Ibid, p. 9.

17. Letter, from Lt. Col. Harold F. Hamit, Medical Corps, Chief, Surgical Research Branch, Research and Development Division to James D. McMurrey, M.D., Assistant Professor of Surgery, Baylor University College of Medicine, 17 January 1958.

18. Progress Report, Vincent P. Collins, M.D., Professor of Radiology, Baylor University College of Medicine, "A Study of the Effects of Total and Partial Body Radiation on Iron Metabolism and Hematopoiesis," Report of 1 February 1956 to 1 September 1956 (Houston, Tex.: Baylor University College of Medicine), p. 1.

19. Progress Report, Vincent P. Collins, M.D., "A Study of the Effects of Total and Partial Body Radiation on Iron Metabolism and Hematopoiesis," Report of 1 September 1955 to 31 January 1956, p. 1.

20. Progress Report, Vincent P. Collins, M.D., "A Study of the Effects of Total and Partial Body Radiation on Iron

Metabolism and Hematopoiesis," Report of 1 February 1956 to 1 September 1956, p. 1.

21. Final Report, Vincent P. Collins, M.D., Professor of Radiology, Baylor University College of Medicine, "The Effect of Total Body Irradiation on Immunologic Tolerance of Bone Marrow and Homografts of Other Living Tissue," 1 February 1963 to 31 January 1964, pp. 2 –4.

22. Ibid, p. 6.

23. Ibid.

24. Ibid.

25. Ibid.

26. Ibid, p. 17.

27. Ibid, p. 20.

28. Study Profile, Capt. C. B. Galley, USN, Armed Forces Radiological Research Institute, "Post-Irradiation Syndrome in Man," 1994.

29. Annual Report, James J. Nickson, M.D., and Irvin S. Glikman, M.D., "The Study of the Post-Irradiation Syndrome in Man" (New York, N.Y.: Sloan-Kettering Institute for Cancer Research, 1 January 1960 to 31 January 1961). (Estimate given in the text here is based on charts at the end of the report.)

30. Study Profile, Capt. C. B. Galley, "Post-Irradiation Syndrome in Man."

31. Progress Report, James J. Nickson, M.D., and Henry J. Kody, Jr., M.D., "Study of the Post-Irradiation Syndrome in Humans," 1 April 1954 to 31 March 1955, p. 3.

32. Annual Report, James J. Nickson, M.D., and Irvin S. Glikman, M.D., "The Study of Post-Irradiation Syndrome in Man," p. 2.

33. Application for Research Contract, "Metabolic Changes in Humans Following Total Body Radiation," 25 September 1958.

34. Memorandum, from Lt. Col. Arthur D. Sullivan, Medical Service Corps, Assistant Chief, Biophysics and Astronautics Research Branch, to Col. Hullinghorst, Subject: "Application for Research Contract," 12 November 1958.

35. Disposition Form, from Capt. David Lambert, USN, Deputy Chief of Staff Weapons Effects and Tests, to Director of Logistics, Subject: "Negotiation of Contract," 29 October 1959.

36. Contract No. DA-49-146-XZ-029, Contract for: Research Relating to Study the Phenomenon of Amino-Aciduria Following Irradiation, signed 1 March 1960, effective 1 January 1960; includes seven modifications.

37. Contract No. DA-49-146-XZ-315, Contract for: Research to Obtain New Information About the Metabolic Effects of Total Body and Partial Body Irradiation, signed 5 January 1965, effective 1 June 1964; includes six modifications.

38. Contract No. DASA 01-69-C-0131, Contract for: Study of Radiation Effects in Man: Manifestations and Therapeutic Efforts, signed 12 November 1969, effective 15 June 1969; includes three modifications and contract completion statement.

39. Letter, from Eugene L. Saenger, M.D., to Director, Defense Nuclear Agency, 26 April 1972.

40. Technical Report, Eugene L. Saenger, M.D. et al., "Radiation Effects in Man: Manifestations and Therapeutic Efforts," Report of 1 April 1971 to 31 March 1972, p. 1. (Although this report states that 88 patients were irradiated in this program, the American College of Radiology and the UCCM Ad Hoc Committee Review reported that 106 patients were referred to the program but 24 dropped out, which indicates 6 fewer patients than listed in the technical report. Letter from Robert W. McConnell, M.D., President, ACR, to The Honorable Mike Gravel, 3 January 1972, p. 6. Report, The Ad Hoc Review Committee, "The Whole Body Radiation Study," January 1972, p. 26.)

41. Technical Report, Eugene L. Saenger, M.D., "Metabolic Changes in Humans Following Total Body Irradiation," Report of 1 November 1961 to 30 April 1963, p. 3.

42. Report, The Ad Hoc Review Committee of the University of Cincinnati, "The Whole Body Radiation

Study at the University of Cincinnati: A Report to the Dean of the College of Medicine," January 1972, p. 28.

43. Technical Report, Eugene L. Saenger, M.D. et al., "Radiation Effects in Man: Manifestations and Therapeutic Efforts," Report of 1 April 1971 to 31 March 1972, p. 27.

44. Technical Report, Eugene L. Saenger, M.D., "Metabolic Changes in Humans Following Total Body Irradiation," Report of 1 November 1961 to 30 April 1963, p. 17.

45. Technical Report, Eugene L. Saenger, M.D., "Metabolic Changes in Humans Following Total Body Irradiation," Report of 1 May 1966 to 30 April 1967.

46. Technical Report, Eugene L. Saenger, M.D., et al., "Radiation Effects in Man: Manifestations and Therapeutic Efforts" (Washington, D.C.: Headquarters, Defense Atomic Support Agency), Report of 1 May 1968 to 30 April 1969, p. 4.

47. Technical Report, Eugene L. Saenger, M.D., et al., "Radiation Effects in Man: Manifestations and Therapeutic Efforts," Report of 1 April 1971 to 31 March 1972, p. 27.

48. Technical Report, Eugene L. Saenger, M.D. et al., "Metabolic Changes in Humans Following Total-Body Irradiation," Report of February 1960 to 30 April 1966, p. 2.

49. Technical Report, Eugene L. Saenger, M.D., et al., "Radiation Effects in Man: Manifestations and Therapeutic Efforts," Report of 1 May 1970 to 30 April 1971, p. 50.

50. Report, The Ad Hoc Review Committee, "The Whole Body Radiation Study," January 1972, p. 34.

51. Ibid, pp. 36–39.

52. Letter, from Otha W. Linton, Director, Washington Office, ACR, to The Honorable Mike Gravel, 24 November 1971. (This document is a secondary source that mentions the date of Senator Gravel's letter requesting the ACR to evaluate the UCCM project. Senator Gravel's original letter has not been located.)

53. Letter, from Robert W. McConnell, M.D., President, ACR, to The Honorable Mike Gravel, 3 January 1972, p. 1.

54. Memorandum, from Clifford G. Grulee, Jr., M.D., to Members of the Ad Hoc Committee, 12 November 1971.

55. Report, The Ad Hoc Review Committee, "The Whole Body Radiation Study," January 1972, pp. 44, 46.

56. "A Report to the Campus Community," UCCM Junior Faculty Association, 25 January 1972.

57. E. Richard King, "Use of Total-Body Radiation in the Treatment of Far-Advanced Malignancies," *Journal of the American Medical Association*, 177 (2 September 1961), p. 88.

58. Ibid, pp. 87–88.

59. Ibid, p. 89.

60. Ibid, pp. 88.

61. Ralph R. Cavalier, Milton Van Metre, F.W. Chambers, Jr., and E. Richard King, "Taurine Excretion in Humans Treated by Total-Body Radiation," *Journal of Nuclear Medicine*, vol. 1 no. 186 (1960), pp. 187, 190.

62. Advisory Committee, *Final Report*, p. 370.

CHAPTER 3

NASOPHARYNGEAL IRRADIATION THERAPY

BACKGROUND AND OVERVIEW

Radium, a radioactive metallic element discovered in 1898, was introduced into the world of medical therapy soon after its discovery.[1] Over time, radium irradiation was used internally and externally to treat gastrointestinal, genitourinary, and brain cancers; lymphomas and leukemias; nonmalignant tumors; goiters; thymus problems; thyroid disorders; acne; scalp ringworm; and birthmarks. Radium was also effective in shrinking inflamed tissue.

Nasopharyngeal irradiation therapy was a medical technique, initially using radon then later radium, to treat patients for hearing impairment caused by chronic inflammation of the middle ear (termed otitis media). This therapy has also been called radium rod therapy. Nasopharyngeal radium irradiation (NRI) was also used during and after World War II in the military to treat aerotitis media (also called middle ear barotrauma), a form of otitis media resulting from pressure changes in the middle ear.

Nasopharyngeal radium therapy involved routing a radium tipped applicator (see figure 1) through the nasal passage and leaving it in place for a specified time before removal. The civilian use of radium rod treatment set the precedent for its use in treating certain military personnel. Both civilian and military facilities used this procedure from the late 1940s until the 1960s.

THE DEVELOPMENT OF RADIUM ROD TREATMENT

Civilian Research and Implementation

In the 1920s, nasopharyngeal irradiation using radium, radon, and x-rays was reported in medical journals as highly effective for shrinking lymphoid tissue at the entrance to the eustachian tubes to prevent middle ear obstructions, infections, and deafness. By the mid-1920s, Johns Hopkins University funded the J. H. Otological Laboratory to study deafness in children. Researchers Samuel J. Crowe, M.D., and his colleagues stated that nasopharyngeal irradiation with radium was the most effective treatment for treating certain types of middle ear deafness.[2] By the late 1920s, Dr. Crowe had developed and standardized a radium applicator and a recommended treatment regime, which was subsequently adopted by many medical practitioners.[3]

As the use of this and other applicators became widespread, the most common procedure was to place the applicators into the nasopharyngeal region for periods that ranged from six to twelve minutes. Typically, the treatment involved using two radium applicators, each containing 50 milligrams of radium. A local anesthetic was given to the patient, and the applicators were inserted into each nostril (see figure 2).[4] The goal of the treatment was to reduce the lymphatic tissue at the opening of the eustachian tubes, allowing the ears to drain. Treatments were routinely repeated over a period of months as determined by tissue response to therapy.

Researchers found that excess lymphoid tissue was present in a substantial percentage of children with middle ear hearing loss. The best time to treat this form of hearing deficiency was found to be during childhood, before recurrent ear infections caused irreversible damage to the inner ear. By the late 1930s, it was standard practice to use NRI for treating repeated viral and bacterial infections, asthma that occurred with repeated viral infections, recurrent middle ear infections, sinusitis, and recurrent tonsillitis.[5]

Proponents of radium rod treatment noted several advantages of nasopharyngeal irradiation over

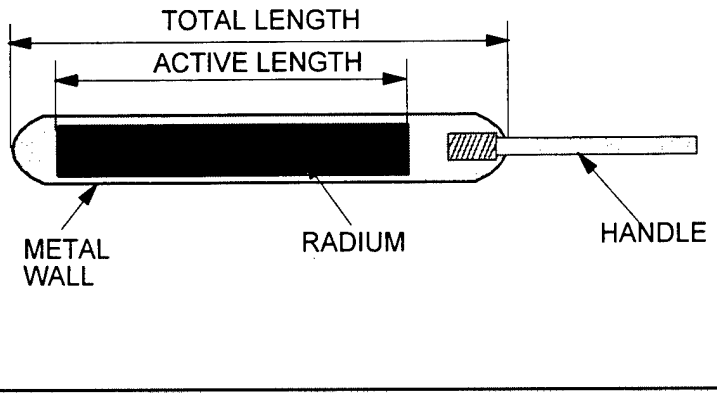


Figure 1 Profile of the nasopharynx radium applicator

conventional x-irradiation and surgery. Radium therapy could shrink lymphoid tissues in areas previously inaccessible to surgeons. Over time, Dr. Crowe became the leader in the area of nasopharyngeal irradiation as a treatment for hearing loss in children and conducted the first extensive study of nasopharyngeal treatment. Funded by the National Institutes of Health (NIH) from 1948 to 1953, this study concluded that nasopharyngeal treatments decreased lymphoid tissue swelling and improved hearing.[6] Radium rod therapy was accepted as the safest treatment to alleviate otitis media in both adults and children.

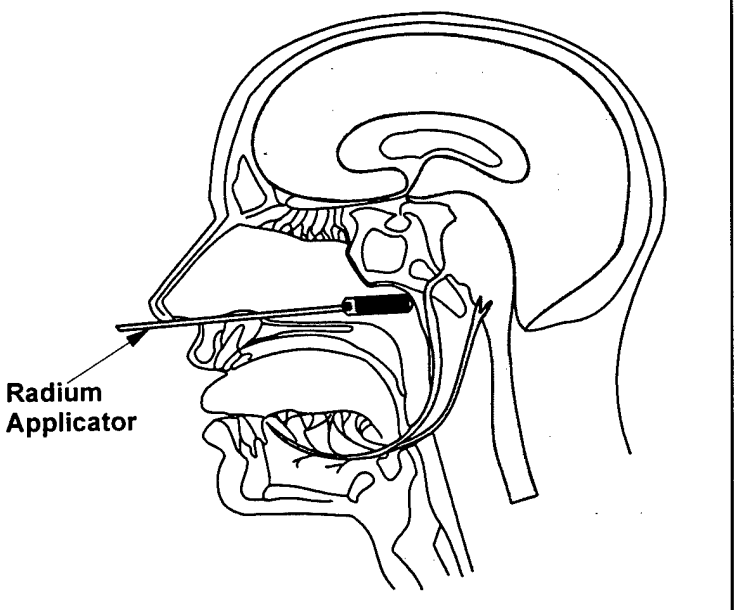


Figure 2 Profile of a human skull depicting the emplacement of a radium applicator for the nasopharyngeal irradiation procedure

Military Uses of Radium Rod Treatment

Aircrew Radium Treatment

Nasopharyngeal radium treatment was an effective means of alleviating middle ear problems in both Army Air Forces (AAF) and Navy servicemen. The rapid pressurization of the middle ear of aircrews during aircraft descent occurred because pressurized cabins had not yet been developed. When pressure equalization in the ear could not occur due to blocked eustachian tubes, aerotitis media could result. Eustachian tube blockage was particularly prevalent during the winter months as a result of upper respiratory tract infections and recurrent colds experienced by servicemen stationed in Europe. Middle ear problems, ranging from pain to ruptured eardrums, would sometimes keep personnel grounded for weeks. In 1944, the AAF Surgeon General officially adopted nasopharyngeal treatments with the radium applicator for AAF servicemen.[7]

A 1944 journal article by E. P. Fowler, Jr., M.D., described how he examined, treated, and collected data on 220 AAF personnel suffering recurrent barotrauma.[8] Dr. Fowler served at an Army hospital in England during the early 1940s. He had obtained radon from British doctors and treated U.S. servicemen from 1942 to 1944 using a radon applicator. His study showed that nasopharyngeal therapy

Terms/Acronyms Used in This Chapter	
AAF	Army Air Forces
ACHRE	Advisory Committee on Human Radiation Experiments
CDC	Centers for Disease Control and Prevention
DVA	Department of Veterans Affairs
half-life	the time taken for the radioactivity level of a substance to reduce to half its original level
NIH	National Institutes of Health
tympanic tubes/rods	tubes placed in the ear near the tympanic membrane to drain fluids

was 79 percent successful in returning aircrews to duty without further inflammation of the lymphoid tissue.[9]

An AAF report[10] about the Third Air Force Irradiation Unit further documented military use of nasopharyngeal therapy. The report detailed the founding of the unit and its mission, as well as the results and variations in treatment over the one-year program. The program was conducted at Drew Air Field in Tampa, Florida, and the doctors involved in the program traveled to training sites around the continental United States to administer treatment. The locations included Gulfport Army Air Field, Mississippi, Esler Field, Louisiana, Barksdale Field, Louisiana, Will Rogers Field, Oklahoma, Stuttgart Army Air Field, Arkansas, Alexandria Army Air Field, Louisiana, and Dyersburg Army Air Field, Tennessee. By the end of August 1945, 2,289 servicemen had been treated with what were termed "encouraging" results.

Another journal article,[11] published in 1945, detailed the beginning of the AAF nasopharyngeal irradiation treatment program and the events that led to the AAF Surgeon General's approval of nasopharyngeal radium therapy. Nasopharyngeal irradiation was determined to be easier than using x-rays or performing surgery in the field. To evaluate the results of this one-year program, doctors involved were asked to conduct standard examinations and treatment regimes and to keep records. Servicemen who experienced barotrauma and were stationed in the following units were treated based on medical necessity: 1st Corps at Mitchel Field and Westover Field, 8th Corps in England, 15th Corps in northern Italy, 12th Air Corps in southern Italy, and 3rd Corps at Drew Field, Florida. The results showed this treatment to be highly effective in returning aircrews to the field.

In 1946, the Submarine Medical Research Laboratory published an article on the effectiveness of nasopharyngeal radium therapy for Navy pilots in temperate zones. In the article, CAPT Page Northington, M.C., USN, discussed the problems associated with rapid pressurization and various treatment methods, as well as barotrauma. He described the issue of ear pressure difficulties as the most common ailment experienced by aviators. After treating sixty male naval aviators with the Crowe radium applicator, Dr. Northington concluded, ". . . the effectiveness of radium therapy in relieving lymphoid tissue obstruction to the eustachian tubes recommends it as the treatment of choice."[12]

Submariner Radium Treatment

During World War II, many U.S. Navy submariner trainees experienced barotrauma during submarine escape training. Recognizing barotrauma as an occupational injury for these servicemen, researchers at the Submarine Medical Research Laboratory in New London, Connecticut, sought to perform a "fairly definitive study on the causes, effects, prediction, and treatment of the disorder."[13] In 1946, they published their findings of a study involving more than 6,000 men.[14] This research was designed to investigate the causes of ear pressure problems, predict who would experience them, and determine ways to prevent and treat this ailment. One research method was to compare different possible treatments after giving subjects a pressure test.

Researchers under the supervision of principal investigators Henry L. Haines, M.D., and J. Donald Harris, Ph.D., collected data on 6,149 young, healthy, male submariner trainees. The patients were divided into six groups: five treatment groups and one control group. The treatments were designed to assist the submarine trainees in accommodating changes during a pressure test without developing barotrauma.

These treatments were:

- Psychological treatment (assurance that the ears would heal without extraordinary intervention; the use of music and chewing gum was also studied)
- Symptomatic treatment with nosedrops (application of a solution of 0.25 percent neosynephrine in saline solution)
- X-ray treatment
- Dental treatment (for those identified with a dental occlusion which may have impacted on the eustachian tube)
- Radium treatment.[15]

The sixth group, the control group, received no treatment.

Of the 6,149 submariner trainees involved in the study, 26.9 percent (approximately 1,600) developed aerotitis media. A total of 732 of the approximately 1,600 were treated with radium therapy,[16] with treatment being effective in more than 90 percent of the cases.[17] Other therapeutic measures used in the study were not as effective as radium. The x-ray treatment was discontinued early in the study. The five test participants showed swelling and discomfort not experienced by those receiving the radium rod treatment, and there were administrative problems arranging the treatments, which had to be performed out of the area.[18]

On 30 April 1996, the Navy found Dr. Haines' original log book, which details the 1944 - 1945 aerotitis media experiment involving submariners at the Submarine Medical Research Laboratory and Submarine Base, New London, Connecticut. The log book contains detailed study data and the names of the approximately 1,600 participants. The Department of Defense (DoD) and the Department of Veterans Affairs (VA) are reviewing and analyzing these data to determine appropriate actions.

Discontinuation of Radium Rod Therapy

The Centers for Disease Control and Prevention (CDC) estimate that between 8,000 and 20,000 U.S. military servicemen were treated with nasopharyngeal irradiation.[19] As discussed previously, approximately 8,000 AAF aviators, naval aviators, and submariners participated in nasopharyngeal irradiation studies. The CDC also estimates that from 500,000 to 2 million people may have been treated with nasopharyngeal irradiation from 1940 to the mid-1960s.[20]

The emergence of pressurized aircraft cabins and the resulting substantial decrease of barotrauma as well as the advent of effective new medical treatments, such as tympanic tubes and antibiotics, led the Air Force and Navy to discontinue the practice of nasopharyngeal irradiation therapy by the early 1960s. The new treatments were easier to administer and more effective than nasopharyngeal irradiation. In addition, in the 1950s and 1960s, medical literature began to report concern that thyroid cancer might occur from head and neck x-rays and from nasopharyngeal radiation therapy.[21]

Retrospective Studies

In the 1980s, two retrospective studies were conducted regarding the effects of nasopharyngeal irradiation on children. Increased cancer risks in other populations exposed to ionizing radiation and the availability of data on children treated with NRI indicated that this would be an important population to study. However, the two studies were inconclusive regarding the potential excess cancer risks for treated children.

The smaller of the two studies was conducted by Dale P. Sandler, Ph.D., and her colleagues from Johns

Hopkins University in Maryland.[22] Health data were gathered in 1982 in a follow-up survey of 904 people who had received radium rod therapy as children to treat hearing difficulties between 1943 and 1960. Researchers compared this group to a matched control group of 2,021 children with similar medical problems who had not received radium rod therapy. The researchers concluded that the risk for all head and neck cancers combined was higher among persons who had received the treatment than among persons who had not. However, the findings were based on small numbers of cancers and were statistically significant only after all categories of head and neck cancers were combined.

In 1995, Dr. Sandler stated that the results obtained in her study suggest a small excess risk of head and neck cancer in patients receiving NRI but that because of the small numbers of cases involved, interpretation was difficult.[23]

A larger study was conducted in The Netherlands by Peter G. Verduijn, M.D. and his associates. In that study, 2,542 children who had been treated with nasopharyngeal irradiation were compared with 2,381 unexposed children who had also been treated for hearing loss. The researchers reviewed medical records and followed up on patients from five clinics in The Netherlands in a 1989 retrospective study of the excess cancer risk to children treated with nasopharyngeal irradiation.[24] No brain cancers were observed in the treated population; three were observed in the controls. Thus, this study did not find an excess of head and neck cancer.[25] Dr. Verduijn summarized the findings of his study by concluding, "... the present study has found no excess of cancer mortality at any site associated with radium exposure by the Crowe and Baylor therapy. Specifically, the finding of Sandler et al. of an excess of head and neck cancer was not found in this study group."[26]

Due to recent concerns about health risks associated with nasopharyngeal radium therapy, the Johns Hopkins University Department of Epidemiology has continued the follow-up study originally conducted by Dr. Sandler.[27] Dr. Verduijn is also conducting a follow-on study of The Netherlands children.

Current Focus on Nasopharyngeal Therapy

Recent interest in the possible adverse health effects of nasopharyngeal radium therapy led to an examination of the past use of nasopharyngeal radium therapy within the military and civilian medical communities. Civilian and Government officials have conducted several reviews evaluating the treatment and its potential adverse health effects, and members of the public have voiced their concerns.

The Senate Subcommittee on Clean Air and Nuclear Regulation conducted a hearing in August 1994. Chaired by Senator Joseph Lieberman of Connecticut, the hearing participants discussed the past use of nasopharyngeal irradiation in military and civilian practice, possible negative health effects of these treatments on adults and children, and the feasibility of additional studies on the health risks related to radium rod therapy. Testimony at the hearing indicated that military use of nasopharyngeal radium therapy was within the accepted medical practices of the day. However, panel members testified that independent studies investigating long-term health risks associated with this treatment were inconclusive.[28] As a result of the hearing, the VA agreed to conduct a pilot study researching the feasibility of an epidemiological study to determine if service members who received this treatment in the past were now at greater risk for head and neck cancers. The CDC agreed to conduct a workshop on the issue for both medical specialists and the public.

The VA's pilot study in 1995 researched the feasibility of an epidemiologic study on veterans who had received nasopharyngeal irradiation treatments to study the occurrence of disease in this population. This study determined that there was virtually no primary documentation of such treatments for veterans who probably received this treatment. Occasionally, veterans' medical records showed a secondary entry, such as a sick call entry, that mentioned a radium treatment had been received, but no treatment time or delivered dose was recorded. An epidemiologic study of veterans, therefore, would be difficult.[29]

The CDC conducted its workshop, "Nasopharyngeal Radium Irradiation," on 27 - 28 September 1995. It was hosted by the Yale University School of Medicine and covered such topics as historical medical practices and knowledge, previous and ongoing epidemiologic studies, estimates of the scope and number of people treated, and possible actions for the future. Participants at the workshop were representatives from the U.S. Senate, the Johns Hopkins School of Medicine, the Radiation Epidemiology Branch of the National Cancer Institute, the National Institute of Environmental Health Sciences, the Department of the Navy, the DoD, various university medical centers, and concerned citizens. General comments were that the risk to the treated populations was not substantial and, due to the lack of identifying data and treatment documentation and the relatively small number of military personnel treated, it would probably be difficult to conduct a meaningful epidemiological study.[30]

In addition, President Clinton's Advisory Committee on Human Radiation Experiments (ACHRE) reviewed studies in the medical community from the 1940s to the present, the evolution of nasopharyngeal irradiation therapy, and current data on the potential health risks concerned with such treatments. The ACHRE *Final Report* states that although risk estimates to date contain considerable uncertainty, the committee did not recommend notification or medical follow-up of children or adults exposed to this treatment.[31]

In response to recommendations made by panel members of the September 1995 CDC workshop, the CDC, the DoD, and the VA cosponsored a videoconference on current medical issues associated with the past use of NRI. On 5 September 1996, the videoconference was broadcast live via satellite to county extension offices, schools, medical institutions, universities, all VA hospitals, and some local and regional cable television stations. The videoconference was intended as both a public health outreach effort for the CDC and as a continuing education opportunity for physicians to learn the proper means of evaluating and treating individuals who report receiving NRI. Primary discussion points included the history of the procedure, the doses of radium used, potential dangers associated with the treatment, the possibility of resulting health effects, and physician evaluation and care of patients with a history of NRI. Discussion panel members included representatives from the CDC, Yale University Medical Center, and the VA. To obtain a videotape of the conference from the CDC, call 1-800-418-7246.

Summary

Nasopharyngeal irradiation was a common medical practice from the 1940s to the mid-1960s to treat otitis media. Until the 1960, medical texts recommended radium rod therapy as a viable treatment for shrinking lymphoid tissue. Such treatments were used by both civilian and military physicians. During World War II, the AAF and Navy found NRI treatments particularly effective in treating barotrauma caused by rapid pressure changes incurred by servicemen. These treatments allowed thousands of American aircrews and submariners to remain in service and avoid recurrent health problems due to barotrauma.

Notes

(To obtain copies of the following documents, see appendix 2.)

1. Edith H. Quimby, "The Background of Radium Therapy in the United States 1906 - 1956," *American Journal of Roentgenology*, vol. 75, no. 3 (1956), p. 443.

2. Samuel J. Crowe, M.D., "Irradiation of the Nasopharynx," *Annals of Otology, Rhinology, and Laryngology*, vol. 55, no. 1 (1946), p. 781.

3. Curtis F. Burnam, M.D., "Irradiation Treatment of Hyperplastic Lymphoid Tissue," *Laryngoscope*, vol. 50 (1940), pp. 663 - 670.

4. Testimony, James Smith, Ph.D., Chief of the Radiation Studies Branch of the National Center for Environmental Health, Centers for Disease Control and

Prevention, Before the Senate Subcommittee on Clean Air and Nuclear Regulation, Senate Committee on Environment and Public Works, 29 August 1994, p. 1.

5. Donald F. Proctor, Leroy M. Polvogt, and Samuel J. Crowe, "Irradiation of Lymphoid Tissue in Diseases of the Upper Respiratory Tract," *Bulletin, Johns Hopkins Hospital*, vol. 83 (1948), pp. 383 - 428.

6. Testimony, James Smith, Before the Senate Subcommittee on Clean Air and Nuclear Regulation, 29 August 1994, pp. 3 - 4; Samuel J. Crowe, "Irradiation of the Nasopharynx," *Annals of Otology, Rhinology, and Laryngology*, vol. 55 (1946), pp. 779 - 788; W. G. Hardy and J. E. Boordley, "Observations from a Controlled Study on the Effect of Nasopharyngeal Irradiation in a Group of School Age Children," *Annals of Otology, Rhinology, and Laryngology*, vol. 62, no. 3 (September 1954), p. 825.

7. "The Use of Radium in the Aerotitis Control Program of the Army Air Forces: A Combined Report by the Officers Participating," *Annals of Otology, Rhinology, and Laryngology*, vol. 54 (1945), pp. 650, 654.

8. E. P. Fowler, Jr., "Use of Radon to Prevent Otitis Media Due to Hyperplasia of Lymphoid Tissue and Barotrauma (Aero-Otitis)," *Archives of Otolaryngology*, vol. 40 (1944), pp. 402 - 405.

9. Ibid, p. 405.

10. Jerome J. Glauber, John N. Smith, and Donald B. Earl, Report of the Third Air Force Irradiation Unit, 31 August 1945.

11. "The Use of Radium in the Aerotitis Control Program," *Annals of Otology, Rhinology, and Laryngology*, 1945, pp. 650 - 660.

12. Capt. Page Northington, M.D., USN, "Radium Therapy in Aerotitis Media," *US Naval Medical Bulletin*, 1946, p. 1567.

13. H. L. Haines and J. D. Harris, "Aerotitis Media in Submariners, Interval Report No. 1 on Bureau of Medicine and Surgery Research Division Project X-434 (Sub. No. 90): Aerotitis Media Among Submariners—Prevention and Treatment, Section A," Bureau of Medicine and Surgery, 18 February 1946, p. 7.

14. Ibid, p. 1.

15. Henry L. Haines and J. Donald Harris, "Aerotitis Media in Submariners," *Annals of Otology, Rhinology, and Laryngology*, vol. 55 (1946), pp. 352 - 353.

16. H. L. Haines and J. D. Harris, "Aerotitis Media in Submariners, Interval Report No. 1," 18 February 1946, pp. 25, 27.

17. Ibid, p. 2.

18. Ibid, p. 52, and Henry L. Haines and J. Donald Harris, "Aerotitis Media in Submariners," *Annals of Otology, Rhinology, and Laryngology*, vol. 55 (1946), p. 352.

19. Summary Report and Executive Summary, "The Public Health Response to Nasopharyngeal Radium Irradiation: A Workshop, Centers for Disease Control and Prevention," 27 - 28 September 1995, p. 6.

20. CDC, Morbidity and Mortality Weekly Report. 29 March 1996, p. 255.

21. Testimony, Dr. James Smith before the Senate Subcommittee on Clean Air and Nuclear Regulation, 29 August 1994, pp. 4 - 5.

22. Dale P. Sandler et al., "Neoplasms Following Childhood Radium Irradiation of the Nasopharynx," *Journal of the National Cancer Institute*, vol. 68 (1982), pp. 3 - 8.

23. Summary Report and Executive Summary, "The Public Health Response to Nasopharyngeal Radium Irradiation: A Workshop, Centers for Disease Control and Prevention," 27 - 28 September 1995, p. 2.

24. Peter G. Verduijn, M.D., et al., "Mortality After Nasopharyngeal Irradiation," *Annals of Otology, Rhinology, and Laryngology*, vol. 98 (1989), p. 839 - 844.

25. Ibid, p. 843.

26. Ibid.

27. Advisory Committee on Human Radiation Experiments, *Final Report* (Washington, D.C.: U.S. Government Printing Office, October 1995), p. 354.

28. Testimony, Dr. James Smith, Before the Senate Subcommittee on Clean Air and Nuclear Regulation, 29 August 1994, pp. 1, 5.

29. Summary Report and Executive Summary, "The Public Health Response to Nasopharyngeal Radium Irradiation: A Workshop, Centers for Disease Control and Prevention," 27 - 28 September 1995, p. 9.

30. Ibid.

31. Advisory Committee, *Final Report*, p. 843.

CHAPTER 4

IODINE-131 STUDY CONDUCTED BY THE ARCTIC AEROMEDICAL LABORATORY

INTRODUCTION

In 1947,[1] the Air Force School of Aviation Medicine established the Arctic Aeromedical Laboratory (AAL) at Ladd Air Force Base near Fairbanks, Alaska. The laboratory was created to study environmentally related hardships affecting military personnel living and working in the Arctic. AAL research and development projects addressed preventive medicine, dietary requirements, emergency survival procedures and equipment, and protective flight clothing.[2] Due to public concerns over Native Alaskan participation, this chapter focuses on one particular study, "Thyroid Activity in Men Exposed to Cold." This study included the use of a radioisotope tracer to assess the role of the thyroid gland in human acclimatization to cold.

BACKGROUND

Construction of Ladd Army Airfield began in 1938 near Fairbanks, Alaska. Ladd Field, which became operational in 1940, was intended as a bulwark against growing Japanese ambitions in the Pacific region. During World War II, the airfield also served as the transfer point for aircraft being flown to the Soviet Union under the Lend-Lease Program. Ladd Field was designated the home of the Army Air Corps' Cold Weather Experimentation Station. It was from this station that the AAL later evolved.

During and after World War II, increasing military operations in severely cold climates necessitated research on protective clothing, survival and emergency techniques, and the effects of cold weather exposure on human physiology. The importance of this type of research was recognized when, in June 1942, the Japanese attacked Dutch Harbor, Attu, and Kiska in the Aleutian Islands of Alaska—then a U.S. territory.

In the 1950s, increasing tensions between the United States and the Soviet Union escalated the potential for active military operations in Alaska and Canada. The United States increased its military presence in Alaska to offset the threat from the nearby Soviet mainland. Additionally, hostilities in Korea, which also involved U.S. forces, warranted improvements in both equipment and procedures for severe cold weather operations.

The potential for conflict demanded U.S. preparedness for operations in challenging environments, and a better understanding of the effects of the harsh climate on troop activities became more important. Until 1967, the AAL made investigations of such effects easier.

"THYROID ACTIVITY IN MEN EXPOSED TO COLD"

An important research objective of the AAL was to study the effects of cold stress on human physiology. Researchers collected extensive data on the diet, physiology, and living habits of Native Alaskan men and women living in the Arctic, specifically, the coastal Eskimos of Point Lay and Wainwright, the inland Eskimos of Anaktuvuk Pass, and the Athapascan Indians of Fort Yukon and Arctic Village. Most of these Native Alaskans resided in tents or log-sod or moss dwellings and survived by hunting and gathering. Therefore, they were

Terms/Acronyms Used in This Chapter

AAL	Arctic Aeromedical Laboratory, established by the Air Force School of Aviation Medicine, located at Ladd Air Force Base near Fairbanks, Alaska
AEC	Atomic Energy Commission [predecessor to the Department of Energy]
basal metabolism	the amount of energy needed to maintain essential basic body functions
endemic	a disease or disorder constantly present in a particular region or specific group of people
goiter	enlargement of the thyroid gland, due to lack of sufficient iodine in the diet
half-life	the time for the activity of a substance to decay to half its original level
iodine-131 (I-131)	a radioactive isotope of iodine; used in diagnosis of thyroid disorders and the treatment of toxic goiter and thyroid carcinoma; I-131 has a half-life of eight days
isotope	one of two or more atoms with the same atomic number but with different atomic weights. (The nuclei of isotopes have the same number of protons but different numbers of neutrons. Isotopes usually have very nearly the same chemical properties but somewhat different physical properties.)
microcurie	a unit of radioactivity. One one-millionth curie, or the quantity of radioactive material in which the number of disintegrations is 3.7×10^4 per second
uptake	the absorption of a nutrient, chemical (including radioactive material), and medicine by an organ or tissue
thyroid (gland)	an organ of the endocrine system; the thyroid secretes hormones that control body metabolism
tracer	a small quantity of radioactive substance introduced into the body so that its distribution, processing, and elimination can be followed by using a radiation detector

constantly engaged in outdoor activities that involved considerable exposure to cold.

The AAL's study, "Thyroid Activity in Men Exposed to Cold," sought to uncover what role, if any, the thyroid gland served in human acclimatization to cold and to determine if the thyroid activity of Native Alaskans was responsible for their apparent adaptation to Arctic conditions. The thyroid gland was chosen as the focal point of the AAL's research because previous studies had demonstrated: (1) increased thyroid activity in animals correlated with severe exposure to cold, (2) involvement of the thyroid in human acclimatization to cold,[3] and (3) elevated basal metabolism in Native Alaskans.[4] Iodine-131 (I-131) was the tracer of choice for examining the thyroid because of its natural tendency to concentrate there.

Eighty-five[5] Eskimos and seventeen Athapascan Indians participated in this study. A control group of servicemen who were not Native Alaskans was made up of six U.S. Army servicemen, whose regular activities involved exposure to cold, and thirteen Air Force servicemen, who usually worked indoors.[6] Participants were all healthy, "normal" individuals.[7]

During the study, which lasted from August 1955 to February 1957, a total of 200[8] tracer doses of I-131 were administered to examine the levels of I-131 in blood, thyroid, urine, and saliva samples.[9] For some subjects, fasting blood samples were taken to analyze serum cholesterol and protein-bound I-131.[10] The study also

involved clinical examinations and in some cases, detailed assessments of iodine intake, basal metabolism, and environmental exposure.

The standard administration for radioiodine tracer studies of the time, as authorized by the Atomic Energy Commission (AEC), was fifty microcuries.[11] Although individual administrations were kept as close to fifty microcuries as possible, due to the long transport of the I-131 from Oak Ridge, Tennessee, and the radioisotope's short half-life, administration generally ranged from eighteen to sixty-five microcuries. In one case, nine microcuries were administered.[12] Overall, sixty-eight Native Alaskans from Wainwright, Point Lay, Fort Yukon, and Point Hope received a single tracer dose of I-131 during the study. Twenty-two Native Alaskans and all nineteen servicemen received two doses of I-131; a group of twelve Anaktuvuk Pass Eskimos and Arctic Village Indians participated in three facets of the study and received three doses of I-131 tracer.[13]

Evaluation of thyroid function indicated abnormally high and rapid I-131 uptakes in the Anaktuvuk Pass Eskimos and the Arctic Village Indians. This result was associated with low iodine intake and a high incidence of thyroid enlargement and, therefore, was attributed to endemic goiter rather than an indication of the effect of cold exposure on thyroid function.[14]

Generally, data yielded no results of statistical significance, and researchers concluded that on the basis of the data:

> . . . the thyroid does not play any significant role in human acclimatization to the arctic [sic] environment when the cold stress is no greater than what is normally encountered by soldiers engaged in usual arctic [sic] service or by Alaskan Eskimos or Indians in the course of their normal life or activities.[15]

Summary

The results of the study, "Thyroid Activity in Men Exposed to Cold," did not support the findings of earlier studies, which indicated that the thyroid played a significant role in human acclimatization to cold. However, over time, improvements in blood analysis techniques enabled other researchers to demonstrate that there is a relation between the thyroid and acclimatization to cold.[16]

In retrospect, concerns were raised about the possible vulnerability of the Native Alaskan participants in the study, particularly because few of the Native Alaskan subjects spoke English and there were language barriers for interpreting some of the procedures (e.g., Native Alaskan languages do not have a word for "radiation.") The AAL Director of Research at the time of the study, Kaare Rodahl, M.D., maintained that every care was taken to work through village elders, medical services were provided to the Native Alaskans, and they were given the chance to refuse to participate. In addition, Dr. Rodahl stated that the radioactive tracer used in these studies was, in his opinion, "a harmless medical substance that posed no risk to the subjects due to the small amount of radiation involved."[17]

Although I-131 has now been replaced for clinical usage by a shorter lived radioisotope, I-123, the doses used in the study were within the standard doses of the time.[18] I-131 was the only radioactive tracer readily available for use in the 1950s when the AAL thyroid function study was conducted.[19]

To address congressional and Native Alaskan concerns about this study, the Institute of Medicine (IOM) of the National Research Council established a committee to evaluate these studies and determine if any follow-up needs to be provided. In its report, the IOM wrote:

> "After examining the records, analyzing the health effects and talking with research subjects as well as researchers, the Committee concludes that the probability of physical harm to the AAL study subjects is negligible, and thus that the subjects were not harmed. From an ethical perspective, the Committee concludes that aspects of the AAL study, especially the informed consent process, were flawed even by 1950s standards and thus the Alaska Natives who participated and, to a lesser extent, the military subjects were wronged."[20]

NOTES

(To obtain copies of the following documents, see appendix 2.)

1. This date is based on Air Force historical documents. A date of 1951 is given by the National Research Council, Institute of Medicine, *Arctic Aeromedical Laboratory's Thyroid Functions Study: A Radiological Risk and Ethical Analysis* (Washington, D.C.: National Academy Press, 1996), p. 2.

2. "History of the Arctic Aeromedical Laboratory," pp. v, 24 (with Air Force Memorandum 22 June 94).

3. As cited in Arctic Aeromedical Laboratory, "Thyroid Activity in Men Exposed to Cold," Technical Report 57–36, p. 1.

4. Statement of Dr. Chester Pierce Before the Advisory Committee on Human Research Experiments, 16 March 1995, p. 4.

5. The text of the AAL Technical Report 57-36 (pp. 3, 81) states "...19 whites, 84 Eskimos and 17 Indians." However, the number of Eskimos who participated in the study was reported as 85 in several of the Technical Report's tables.

6. Arctic Aeromedical Laboratory, "Thyroid Activity in Men," p. 2.

7. Ibid, p. 6.

8. The text of the AAL Technical Report 57-36 (pp. 3, 81) states, "A total of 200 tracer experiments was made in..." The number of doses received per participant indicates only 186 doses of I-131 were used.

9. Arctic Aeromedical Laboratory, "Thyroid Activity in Men," p. 3–5.

10. Ibid, p. 5.

11. National Research Council, Institute of Medicine, *The Arctic Aeromedical Laboratory's Thyroid Functions Study: A Radiological Risk and Ethical Analysis* (Washington, D.C.: National Academy Press, 1996), p. 12.

12. Arctic Aeromedical Laboratory, "Thyroid Activity in Men," p. 3; National Research Council, *The Arctic Aeromedical Laboratory's Thyroid Functions Study*, p. 12.

13. National Research Council, *The Arctic Aeromedical Laboratory's Thyroid Functions Study*, p. 36.

14. Arctic Aeromedical Laboratory, "Thyroid Activity in Men," p. 82.

15. Ibid, pp. 80–81.

16. As cited in National Research Council, *The Arctic Aeromedical Laboratory's Thyroid Functions Study*, pp. 21, 76.

17. Arctic Aeromedical Laboratory, "Thyroid Activity in Men," p. 85.

18. National Research Council, *The Arctic Aeromedical Laboratory's Thyroid Functions Study*, pp. 12, 79.

19. Ibid, p. 2.

20. National Research Council, *The Arctic Aeromedical Laboratory's Thyroid Functions Study*, p. 5.

CHAPTER 5

INTENTIONAL ATMOSPHERIC RELEASES OF RADIOACTIVE MATERIAL

The United States emerged from World War II with a nuclear monopoly—a position it held for only four years. The Soviet Union conducted its first atmospheric nuclear weapons test in August 1949. On 23 September 1949, President Truman announced that the Soviets possessed a nuclear bomb and were undertaking a large nuclear weapon development program. This development highlighted two intelligence and weapons development requirements for the national security infrastructure: (1) the long-range detection of radiological materials to monitor the Soviet Union's nuclear weapons development program and (2) an increased need for developing the United States' nuclear arsenal.

Earlier in 1947, General Dwight D. Eisenhower, Army Chief of Staff, assigned the Army Air Forces (AAF) the mission of long-range detection of Soviet nuclear tests. The AAF was responsible for worldwide detection of atomic explosions; the collection, analysis, and evaluation of required scientific data; and the appropriate dissemination of the resulting intelligence.[1] The long-range detection of radioactive releases was an integral component in the development of methods to collect data on foreign countries' production of radioactive materials and their atmospheric nuclear weapons tests.

One means of developing and testing methods for the long-range detection of radioactive material was to conduct an atmospheric release test. The Department of Defense participated in one such atmospheric release, which was in December 1949 in Washington State. The test was known as "Green Run." The premise of Green Run was that aerial monitoring and sampling of a radioactive cloud, even at great distances from its release point, could provide evidence of the presence of radioactive materials.

Another intentional atmospheric release of radiation occurred during the Atomic Energy Commission's (AEC) radioactive lanthanum (RaLa) program conducted at Los Alamos Scientific Laboratory (LASL). The RaLa program was a series of implosion tests critical to the development and improvement of the plutonium bomb.

GREEN RUN

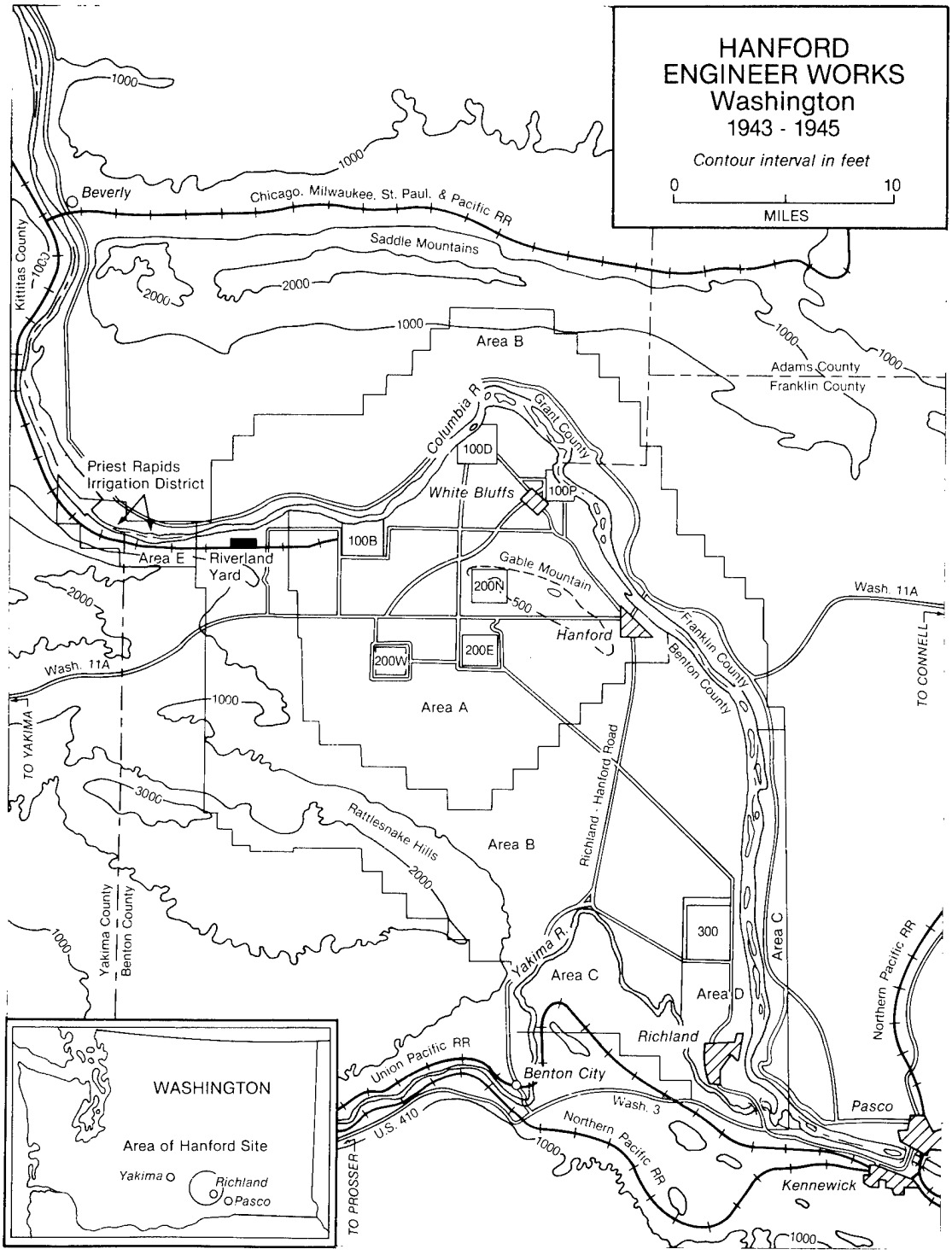
The Hanford Site

The Manhattan Project was the code name for scientific research that was conducted to build an atomic bomb during World War II. In 1943, Manhattan Project officials selected a site near Richland, Washington, to produce plutonium, an element used in nuclear weapons. This site, known as the Hanford Nuclear Reservation, became the world's first plutonium factory (see map 1). Hanford production facilities expanded between 1947 and 1953 to meet increased Cold War demands for nuclear weapons materials.[2] Management responsibility for the Hanford Nuclear Reservation transferred from the Manhattan Project to the AEC in 1947.

What Was Green Run?

After irradiation in one of Hanford's four nuclear reactors, nuclear fuel was normally stored for 83 to 101 days before it was processed to extract plutonium.[3] This cooling period allowed many radioactive materials with short half-lives to decay.

MAP 1 THE HANFORD ENGINEER WORKS



To release sufficient radioactive material into the environment to conduct the long-range monitoring test, fuel that had been cooled for only sixteen days (i.e., "green" material) was used. The use of the green material resulted in a much greater release of iodine-131 (I-131) and xenon-133 (Xe-133) into the environment than would have occurred under normal production conditions.

Acronyms Used in This Chapter

AAF	Army Air Forces
ACHRE	Advisory Committee on Human Radiation Experiments
AEC	Atomic Energy Commission [predecessor of the Department of Energy]
DoD	Department of Defense
HEDR	Hanford Environmental Dose Reconstruction Project
HID	Health Instrument Division of the General Electric Company
LASL	Los Alamos Scientific Laboratory, now called the Los Alamos National Laboratory (LANL)
RaLa	radioactive lanthanum
TSP	Technical Steering Panel
USAF	United States Air Force
Xe-133	xenon, the 54th element on the periodic chart; produced artificially in nuclear reactors and nuclear explosions; has a half-life of 5.7 days

Preparations for Green Run

On 25 October 1949, representatives of the Air Force, the AEC, and the General Electric Company (Hanford's postwar contractor) agreed on a plan for a larger-than-routine release of radioactive material from Hanford for the Green Run long-range detection test.[4] The report "Dissolving of Twenty Day Metal at Hanford" states that Hanford officials planned to release into the environment approximately 4,000 curies of I-131 and 7,900 curies of Xe-133.[5]

The Health Instrument Division (HID) of the General Electric Company, responsible for public health at the Hanford Nuclear Reservation in 1949, required the following weather conditions before initiating Green Run:

- Local inversion of air (a layer of cold air near the ground was required to help prevent released radioactive materials from reaching the ground before they were well diluted)
- No rain or fog, which would prevent the airborne radiological data collection efforts
- Wind speed at less than 15 miles per hour at 200 feet
- West to southwest winds to facilitate airborne radiological data collection effort
- Conditions allowing the radioactive emissions to stay aloft long enough to be measured.[6]

Because weather conditions were critical to the test, the Air Force's Air Weather Service expanded existing weather forecasting and observation stations.[7] The Air Force also added a forecaster to the Spokane Air Force Base weather station specifically for the Green Run test.[8]

The Green Run Event

Unusually inclement weather in late November 1949 caused a one-week postponement of the test. Test planners prepared to begin the Green Run release on the night of 2 December. An updated forecast predicted acceptable weather conditions for 2 December, that were expected to continue for the twelve-hour period needed to complete the release.[9]

Originally, the Air Force had recommended beginning the release between 1:00 a.m. and

TERMS USED IN THIS CHAPTER

containment	the policy of attempting to prevent the influence of an opposing nation or political system from spreading
curie	a unit of radioactivity
gamma radiation	electromagnetic, rather than charged particle, radiation; highly penetrating
"green" period	the period before decay, or cooling, of radioactive materials in nuclear fuel
half-life	the time for the activity of a substance to decay to half its original level
iodine-131 (I-131)	a radioactive isotope of iodine; used in diagnosis of thyroid disorders and the treatment of toxic goiter and thyroid carcinoma; I-131 has a half-life of eight days
Los Alamos Human Studies Project Team	A research team that investigated Los Alamos' involvement in human radiationexperiments
Manhattan Project	the top-secret project during WWII to build an atomic bomb; Los Alamos was selected as the bomb laboratory site; Hanford, Wash. and Oak Ridge, Tenn. were selected as the sites for plutonium production
nuclear weapon	a weapon where energy results from the fission of heavy elements or fusion of hydrogen isotopes
point source	radioactive material that is manually placed in a known spot; usually used for calibration or measurement purposes and re-covered after the test
RaLa	radioactive lanthanum
scrubbers	a device designed to prevent the release of radioactive particles
World War II	1939-1945, fought between the Allies (Great Britain, France, the Soviet Union, Canada, and the United States as well as other nations) and the Axis (Germany, Italy, Japan, and other countries)

3:00 a.m. on 3 December so that the bulk of the radioactivity would be released after dawn. This would make the task of tracking the radiation easier. However, a local temperature inversion (one of the weather conditions required by test planners to initiate the test) was predicted to end on the morning of 3 December. The Air Force and HID managers compromised on a start time of 8:00 p.m. on 2 December.[10]

The Green Run release began at 8:00 p.m. on 2 December 1949. The material was released from a spare dissolver in Hanford's "T" plant (see figure 1). Air scrubbers were intentionally deactivated for Green Run to maximize the radioactive material released into the atmosphere.

The Air Force used air-sampling aircraft mounted with multiple radiological measuring devices to monitor radiation levels in the Hanford area.[11] Air sampling began near dawn on the morning of 3 December and continued until the afternoon of the same day.[12]

Weather conditions during the release were unstable. Several unpredicted changes in the weather occurred during the twelve-hour release. Increased wind speeds decreased the strength of the inversion, and a shift in the wind direction half-way through the release affected the

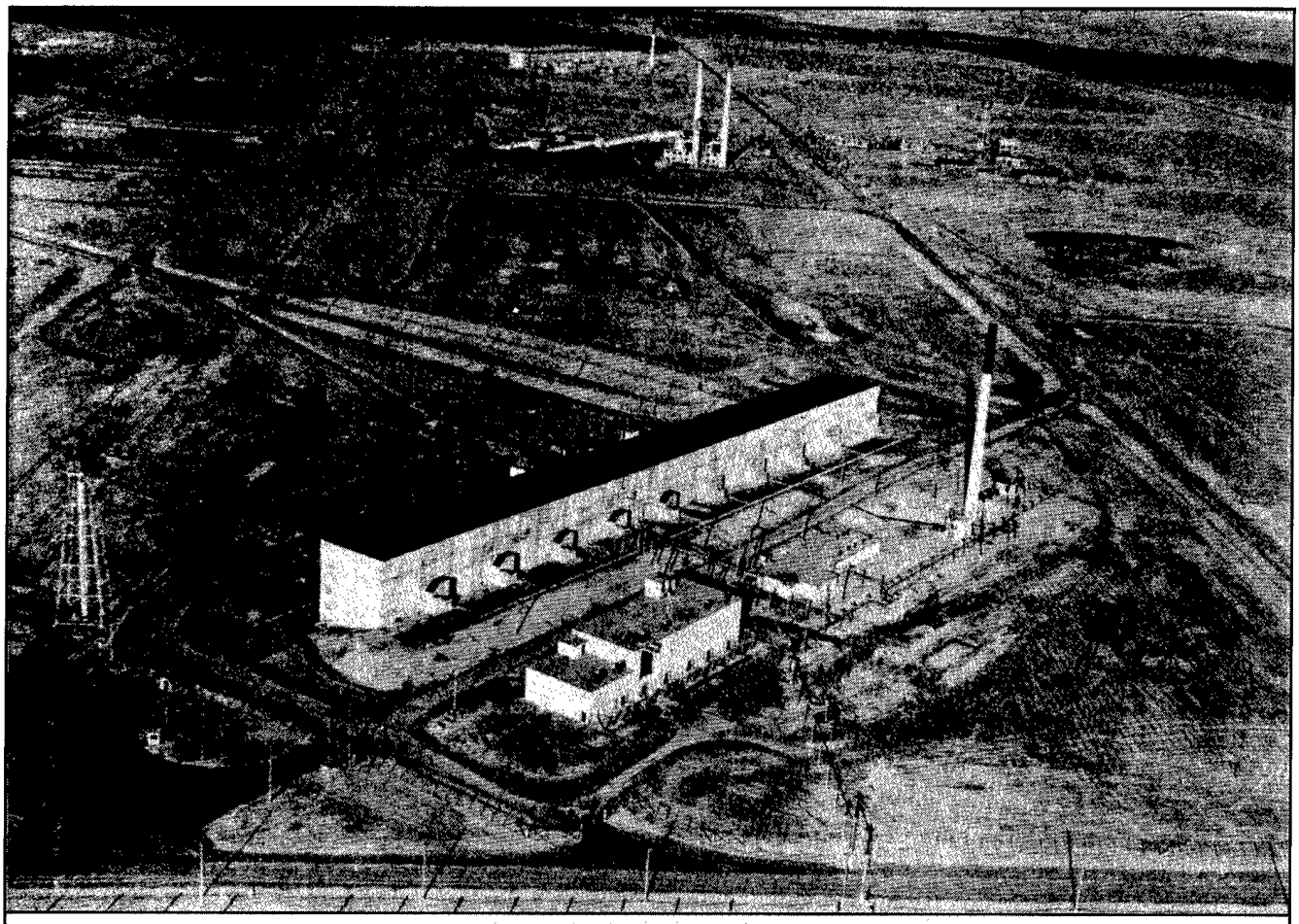


Figure 1 Hanford's "T" plant, from where the Green Run material was released

distribution of radiation and the amount that was deposited locally.[13]

Measuring Contamination

Estimates vary about the actual quantity of radioactive material released into the environment as a result of the Green Run release. The report "Dissolving of Twenty Day Metal at Hanford" estimates that up to 7,780 curies of I-131 (almost twice the original estimated amount) and 20,000 curies of Xe-133 (approximately two and one-half times the original estimated amount) were released.[14] Reasons for the discrepancies in the estimated amounts before and after the test are unknown.

In addition to the Air Force cloud sampling, ground-based static and mobile radiological monitoring devices were used to measure radiation levels. The overall pattern of deposited I-131 on vegetation after the Green Run release "extended in an elongated shape about 40 miles wide and 200 miles long lying northeast and southwest of the" Hanford site.[15]

Approximately 2,500 vegetation samples were taken from October through December 1949, about one-half taken after the Green Run release.[16] According to the Advisory Committee on Human Radiation Experiments (ACHRE) study on the Green Run release, "Measurements of radioactivity on vegetation produced readings that, while temporary, were as much as 400 times the then-

'permissible permanent concentration' on vegetation thought to cause injury to livestock."[17] Animal specimens collected from the Hanford reservation "received thyroid irradiation varying from tolerance to 80 times tolerance daily."[18]

The HID's December 1949 activity report stated:

> Widespread contamination by I-131 occurred as a result of a specifically requested dissolving at short cooling time. The prediction that this could be accomplished once with negligible risk to personnel was supported by the experimental observations. However, the resultant activity came close enough to significant levels, and its distribution differed enough from simple meteorological predictions that the H.I. Divisions [sic] would resist a proposed repetition of the test."[19]

Access to Further Information on Green Run

The Technical Steering Panel (TSP) of the Hanford Environmental Dose Reconstruction (HEDR) Project was established in 1987 to address public health concerns. The TSP's main objective was to estimate radiation doses to Hanford residents. Although Green Run was not a major emphasis of the TSP, data related to Green Run were incorporated into this dose reconstruction effort.

Radiological monitoring data routinely collected for the Hanford area were vital tools used by the TSP experts to evaluate the quantity of radioactive material released into the environment as a result of day-to-day plant operations. The HEDR project scientists estimated that 98 percent of the radiation doses received by Hanford area residents were the result of I-131. According to the TSP, "[t]he Green Run release contributed about 2.3 percent of the total I-131 released [from the Hanford Reservation] from 1944 through 1951."[20]

Measurements of radioactive materials vented to the atmosphere and released to soils and the Columbia River began with the start-up of Hanford facilities in 1944. Environmental studies expanded to include measurements of radioactive materials in the air, ground, vegetation, food, wildlife, Columbia River water, drinking water, sediment, fish, and other aquatic life.

The TSP disbanded on 31 December 1995. Additional information on the Green Run and other Hanford releases can be obtained from the Hanford Health Information Network (HHIN), 2400 Smith Tower, 506 Second Avenue, Seattle, Washington 98104, Telephone: (206) 223-7660.

The RaLa Program

The Los Alamos Scientific Laboratory Site

The RaLa program was developed at LASL in New Mexico. LASL's main research goal was to study weapon implosion dynamics. The Air Force involvement in the RaLa tests was limited to flying a specially equipped B-17 aircraft to track the location and level of contamination in the atmosphere resulting from three of the 254 RaLa tests. The purpose of these air sampling tests was to examine the military's capability to track radiological material released into the environment.

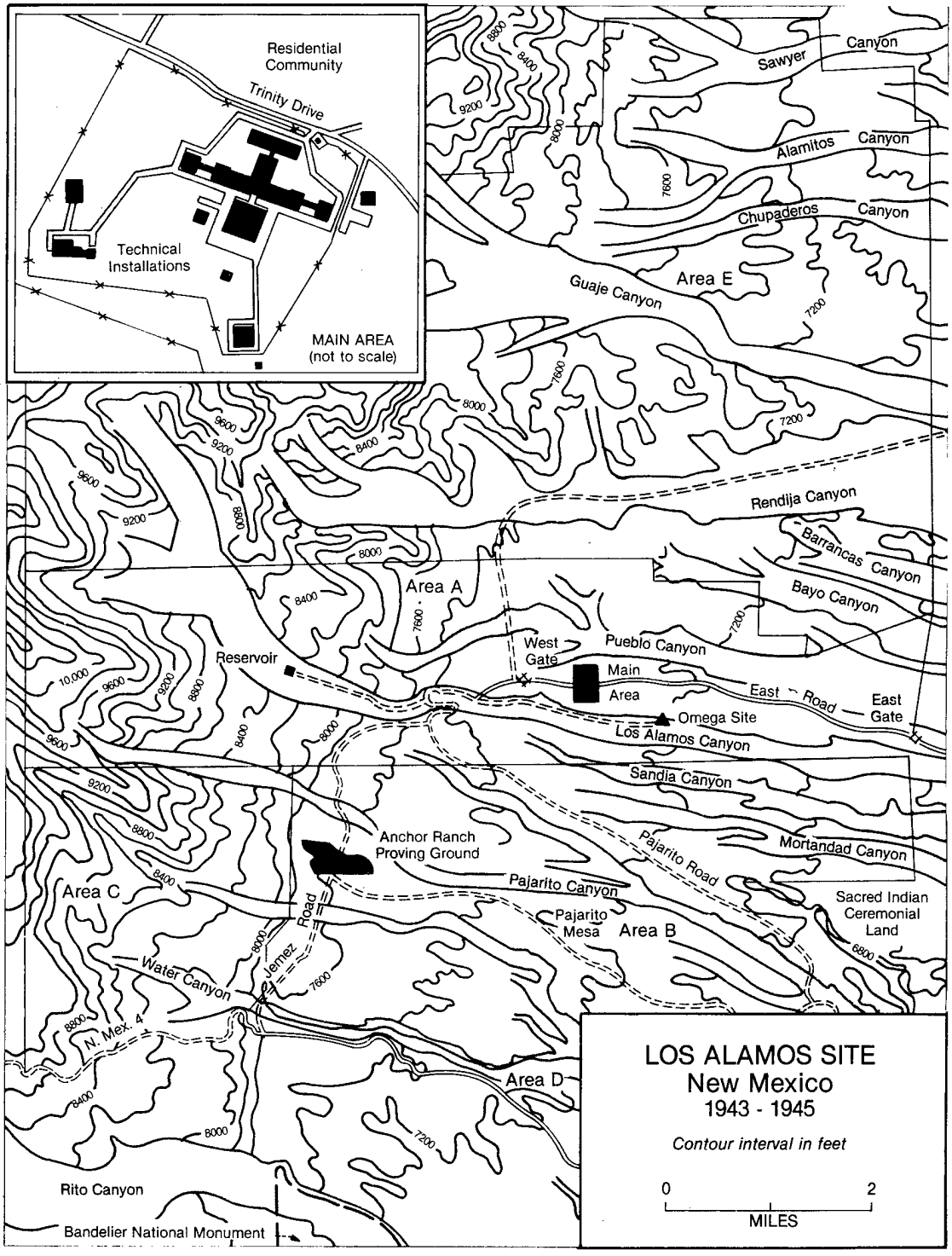
The RaLa Studies

From September 1944 to March 1962, 254 implosion experiments involving various amounts of high explosives and radioactive lanthanum were conducted at LASL. The entire RaLa program was conducted in Technical Area 10 in Bayo Canyon (see map 2).

For these implosion tests, a lanthanum-140 (La-140) source was placed inside a high-explosive test assembly. La-140 was used primarily because its short half-life of forty hours ensured short-lived contamination of the test site. Gamma radiation from the La-140 provided information on the progression of the implosion process. No nuclear bombs were detonated during the RaLa program.

According to the Los Alamos Human Studies Project Team, the Atmospheric Physics Laboratory of the Air Force Cambridge Research Laboratory

MAP 2 LOS ALAMOS SITE



took advantage of three of the RaLa events to test radiation detection equipment. A calibration effort was conducted after the last tracking flight.

The three atmospheric tracking tests were conducted in March and April 1950. The purposes of the atmospheric tracking portion of the RaLa tests were:

> first to track a radiological gaseous cloud as long as possible, second, to study the rate at which the ionization produced by the radioactive matter decreases and diffuses, and finally to analyze the "fallout" of radioactive substances from the cloud.[21]

The radiological data sampling equipment was mounted in the nose of a B-17 aircraft flown out of Kirtland Air Force Base, New Mexico.[22] The atmospheric sampling tests were divided into three segments: measurement of background conductivity, the tracking of the radioactive cloud, and measurement and mapping of the radioactive "fallout."[23]

To track the progress of the radiological cloud, the B-17 attempted to fly through the cloud's center and collect radiological data.[24] The aircraft continued to track the course of the cloud for one and one-half to two hours for each of the three tests. During the 29 March 1950 test, the cloud was tracked as far away as Waltrous, New Mexico, approximately seventy miles from the Bayo Canyon test site.[25] The second tracking test was canceled before completion because the radioactive cloud drifted over restricted airspace at Los Alamos. During the third test on 6 April 1950, the cloud was only visible for a few minutes, making it difficult for the aircraft to fly routes similar to the first test. The tracking lasted two hours.[26] In July 1950, a B-17 flew over an uncovered point source of RaLa to calibrate the onboard instruments. After the flyover, the RaLa container was closed and returned to LASL. No radioactive material was released into the environment during this calibration effort.

Access to Further Information on RaLa

In January 1994, the Human Studies Project Team was established to collect information on Los Alamos National Laboratory participation in human radiation experimentation and the RaLa program. None of the RaLa data collected contained information suggesting that any human experimentation of any kind was planned or performed in conjunction with any RaLa tests. For more information on the RaLa studies, contact the Department of Energy (see appendix 2 for information).

Notes

(To obtain copies of the following documents, see appendix 2.)

1. Memorandum, from General Dwight D. Eisenhower, Army Chief of Staff, to Commanding General, AAF, Subject "Long Range Detection of Atomic Explosions," 16 September 1947.

2. U.S. Department of Energy, *Human Radiation Experiments: The Department of Energy Roadmap to the Story and the Records* (Oak Ridge, Tenn.: Office of Scientific and Technical Information, 1995), p. 76.

3. H. J. Paas and W. Singlevich, *Radioactive Contamination in the Environs of the Hanford Works for the Period October, November, December 1949* (Hanford Works, Wash.: General Electric Co., 2 March 1950), p. 3.

4. Memorandum, from Chief of Staff, to Commander, Military Air Transport Service, Subject: "Detection of Stack Effluents," 10 November 1949.

5. Lt. W. E. Harlan, D. E. Jenne, and J. W. Healy, *Dissolving of Twenty Day Metal at Hanford* (Hanford Works, Wash.: General Electric Co. Nucleonics Department, 1 May 1950), p. 7.

6. Ibid, pp. 5–6.

7. Ibid, p. 8.

8. Ibid.

9. Ibid, p. 18.

10. Ibid, p. 7.

11. Ibid, pp. 12–13.

12. Ibid, p. 46.

13. Ibid, pp. 20–25.

14. Ibid, pp. 26–28.

15. H. J. Paas and W. Singlevich, *Radioactive Contamination*, p. 3; H. M. Parker, *Health Instruments Divisions Report for Month of December 1949* (Hanford Works, Wash.: Health Instruments Division, General Electric Co., 6 January 1950), p. 19.

16. H. J. Paas and W. Singlevich, *Radioactive Contamination*, p. 13.

17. Advisory Committee on Human Radiation Experiments, *Final Report* (Washington, D.C.: U. S. Government Printing Office, October 1995), p. 511.

18. Lt. W. E. Harlan, D. E. Jenne, and J. W. Healy, *Dissolving Twenty Day Metal*, p. 3.

19. H. M. Parker, *Health Instruments Divisions Report*, p. 3.

20. Technical Steering Panel of the Hanford Dose Reconstruction Project, "The Green Run," Fact Sheet #12, p. 4.

21. Samuel C. Coroniti, *Report on the Atmospheric Electrical Conductivity Tests Conducted in Vicinity of Los Alamos Scientific Laboratories, New Mexico* (Cambridge, Mass.: Atmospheric Physics Laboratory, Geophysical Research Directorate, Air Force Cambridge Research Laboratories, 26 May 1950), p. 1.

22. Ibid, pp. 3, 7.

23. Ibid, p. 3.

24. Ibid, p. 4.

25. Ibid, pp. 9, 12.

26. Ibid, pp. 12–14.

CHAPTER 6

RADIOLOGICAL WARFARE

INTRODUCTION

During World War II, scientists explored military uses of radiological materials. The ability to manufacture radioactive materials had already been developed. Scientists began to explore the feasibility of dispersing radioactive material over a land area to deny its use to the enemy. Discussions included using such radiological weapons to destroy crops, poison water supplies, or force the enemy to abandon a critical facility.

Radiological warfare involves:

> the use of radioactive substances to produce personnel casualties or to deny the enemy full use of terrain or installations due to the physiological damage which will result from continued occupation of the area.[1]

The dispersal of radiological agents does not involve an atomic bomb but rather uses conventional explosives to disperse radioactive material over a given area.

The Allies knew that Germany had a fledgling atomic weapons development program and that it might also be considering a radiological warfare program. Therefore, the United States developed contingency plans for a response to German use of such weapons. However, allied efforts quickly crippled the German atomic bomb effort, and the threat of their use of any radiological warfare program ceased. As the U.S. atomic bomb program progressed from theory to fact, the United States' interest in radiological weapons decreased.

RECONSIDERATION OF RADIOLOGICAL WARFARE

After World War II, the United States began an atomic bomb testing program. One test involved an atomic weapon detonated underwater at Bikini Atoll, Pacific Proving Ground, Marshall Islands. This test, known as Shot BAKER, was conducted in July 1946 as part of Operation CROSSROADS. An atomic weapon was suspended ninety feet beneath a ship anchored in the midst of a target fleet.[2] The test weapon had the same power as the bomb dropped at Nagasaki (yield equal to 21 kilotons of TNT). "The detonation caused the fleet to be bathed in radioactive water spray and radioactive debris from the lagoon bottom."[3] Shot BAKER resulted in widespread contamination of the target fleet and consequently renewed interest in the idea of radiological warfare.

Joseph G. Hamilton, M.D., one of the leading civilian scientists studying radiological warfare, wrote a memorandum to the Army in December 1946 discussing not only how much damage radiological warfare could do but also the need for a greater understanding of how the United States could combat the effects of radiological weapons. Dr. Hamilton wrote:

> I strongly feel that the best protection that this nation can secure against the possibilities of

ACRONYMS USED IN THIS CHAPTER	
ACHRE	Advisory Committee on Human Radiation Experiments
AEC	Atomic Energy Commission
DoD	Department of Defense
TNT	trinitrotoluene (a high explosive, used for blasting)

TERMS USED IN THIS CHAPTER

attenuation	lessen in severity, value, amount, intensity, etc.; weaken
atoll	a ring-shaped coral island nearly or completely surrounding a lagoon
curie	a unit of radioactivity
Dugway Proving Ground	Army Chemical Corps facility in the Utah desert
half-life	the time for the activity of a substance to decay to half its original level
isotope	atoms of an element with the same number of protons but different numbers of neutrons
kilotons	a thousand tons; the energy of a nuclear explosion that is equivalent to the explosive power of 1,000 tons of TNT
Manhattan Project	the top-secret project during WWII to build an atomic bomb; Los Alamos was selected as the bomb laboratory site; Hanford, Wash. and Oak Ridge, Tenn. were selected as the sites for plutonium production
nuclear fission	the splitting of the nuclei of atoms into two fragments of approximately equal mass accompanied by conversion of part of the mass into energy: the principle of the atomic bomb
point source	radioactive material that is manually placed in a known spot; usually used for calibration or measurement purposes and re-covered after the test
tantalum	a rare corrosion-resistant, metallic chemical element used to make nuclear reactors, aircraft, and missile parts, etc.
shot	test
weathering	the effects of weather (wind, rain, etc.) on the residual radioactive material after its initial dispersal
World War II	1939-1945, fought between the Allies (Great Britain, France, the Soviet Union, Canada, and the United States as well as other nations) and the Axis (Germany, Italy, Japan and other countries)

> radioactive agents being employed as a military tool by some foreign power is a thorough evaluation and understanding of the full potentiality of such an agent.[4]

There were those who argued that radiological warfare could be a more humane form of warfare. It could effectively contaminate an area without necessarily causing immediate death. The radioactivity level of the weapon and the amount of time spent in the contaminated area would determine the possibility of injury or death. The idea of using radiological warfare weapons to deny an enemy use of an area by contamination was discussed within the military community in the later months of 1946 and into 1947. The interest in radiological warfare became a starting point for the establishment of programs and panels.[5]

THE JOINT RADIOLOGICAL WARFARE STUDY PANEL

In May 1948, the Atomic Energy Commission (AEC) and the Department of Defense (DoD) created a joint study panel chaired by W.A. Noyes, a chemist from the University of Rochester. The panel, called the Noyes Panel, included DoD and AEC officials as well as

non-Government experts. The panel's purposes were to evaluate the feasibility of an offensive radiological warfare program and to establish an understanding of how to defend against a radiological attack. The panel met six times between May 1948 and November 1950.

At the panel's first meeting on 23 May 1948, panel members recommended that the study be broken down into three categories: medical and biological research on the effects of radiation and radioactive materials conducted by the Army Chemical Corps Toxicity Laboratory at The University of Chicago, chemistry studies on the production of radioactive materials for use in radiological warfare carried out mainly by the AEC, and military uses and dissemination of possible radiological warfare munitions conducted mainly by the Chemical Corps.[6]

The Army Chemical Corps Test Safety Panel

Concurrent with the Noyes Panel, the Army Chemical Corps established a Test Safety Panel in May 1949 to review the test designs of radiological warfare tests and their impact on the safety of the local civilian population.[7] The panel, chaired by Joseph Hamilton, M.D., consisted of prominent Government and civilian physicians and physicists.

The panel reviewed Chemical Corps proposals for radiological warfare tests at Dugway Proving Ground. During the review of the Dugway testing program, the Test Safety Panel investigated possible dangers, such as contamination to water supply, food, crops, and animal population.[8] The Chemical Corps was responsible for the safety of civilian and military personnel working at Dugway Proving Ground.[9] Under Dr. Hamilton's leadership, the panel examined and discussed safety concerns, eventually accepting the test program with the understanding that the first two tests would be subject to review for radiological safety before any further tests were allowed.[10]

On 15 September 1949, a Test Safety Panel report stated, "The Panel was favorably impressed by the careful consideration given to the manifold problems of protection and undue dissipation of radioactive materials where serious problems might arise."[11]

Radiological Agent Selection

During the radiological warfare testing, scientists were researching a variety of radioactive elements for toxicity levels to determine their feasibility as radiological warfare agents. One 1947 memorandum discussed the criteria for radiological agent selection:

- Toxicity by inhalation
- Toxicity by application to the body or to clothing
- Rapidity of action [how fast it affects area or personnel]
- Persistency [how long it remains a danger]
- Stability of the radioactive element [half-life]
- Penetrability of protective devices
- Availability in required quantities.[12]

The elements that met the above criteria included radiological agents with half-lives that ranged from seconds to centuries. It was generally thought that the military operations would benefit most from a radioactive element that had a half-life between several weeks and one year. If the element had too short a half-life, it would no longer be sufficiently active by the time it reached the test site or the battlefield. An excessively long half-life would cause long-term area denial, which would keep U.S. troops from entering a battlefield they might need to use or cross later. The selection processes would enable scientists and researchers to locate the best elements to use for radiological warfare munitions.

The Test Programs

Oak Ridge Tests

While the majority of the radiological warfare field testing was conducted at Dugway Proving Ground in Utah, the first three field tests were conducted at Oak Ridge, Tennessee. In 1948, Oak Ridge Scientific Laboratory (ORSL) scientists tested

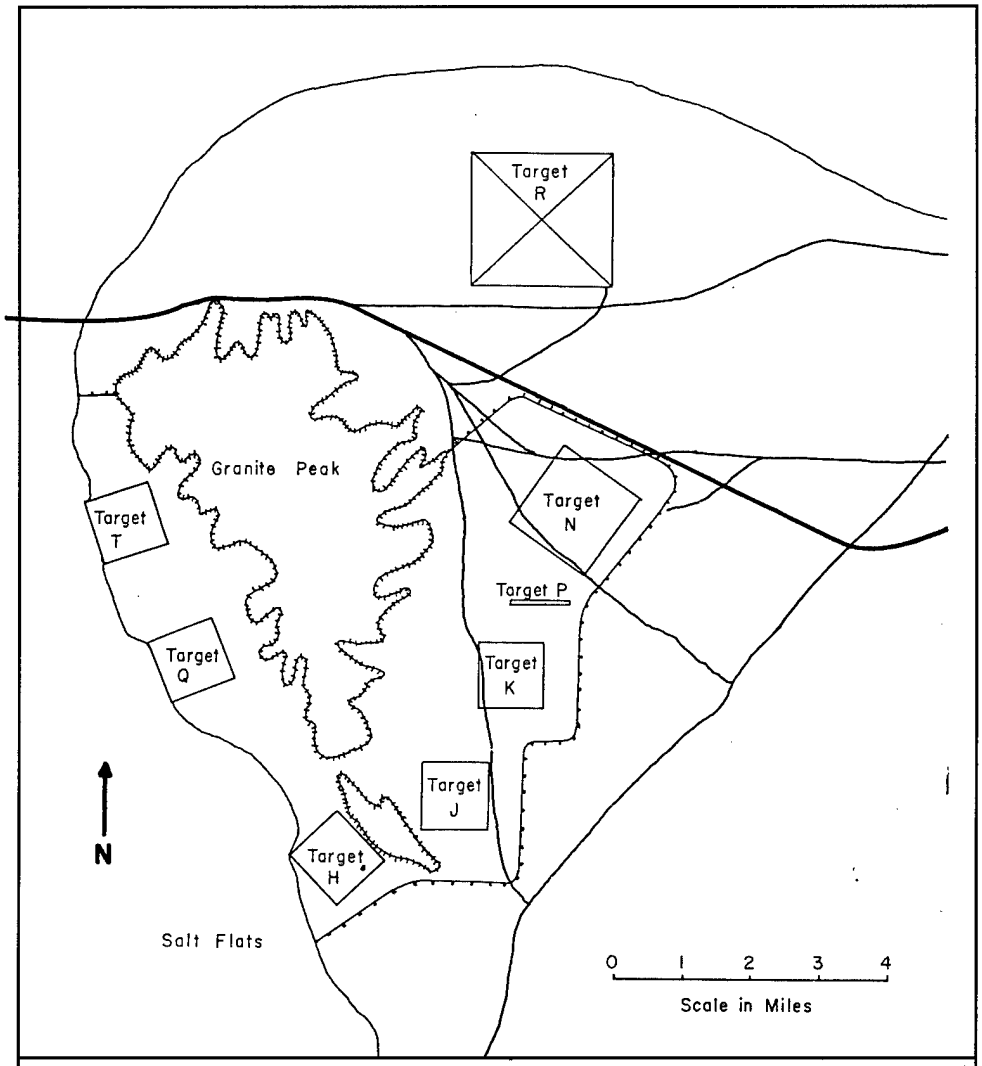
radioactive lanthanum and radioactive tantalum. They also researched the feasibility of zirconium and columbium as radiological warfare agents.

Radioactive lanthanum was placed at designated locations in a field. Measurements were taken at varying distances from the source and then the sources were removed from the field; the sources left no residual radiation in the environment.[13] The first test involved three radioactive sources of approximately 1,280, 100, and 20 curies of lanthanum. The second test involved only the 1,280-curie source. In a third test involving radioactive tantalum, a grid pattern of more than 250 tantalum wires was placed over a rectangular plot of land. Measurements of radioactive intensity were taken at certain points in the grid, and the wires were removed. These tests left no residual contamination in the environment.[14]

Dugway Tests

A radiological munition field testing program began at Dugway Proving Ground in Utah in October 1949 and continued until 1952. Field tests used only small amounts of radioactive material so that radiation detection devices could map the dispersal pattern. There was no human experimentation associated with the radiological warfare munition testing program.

Design efforts originally focused on using an explosive force to distribute the radiological agent. Later in the program's development, the designs focused on a munition that would release grooved spheres capable of more efficiently scattering the material. Radioactive tantalum was used because of its availability. In total, approximately 13,690 curies of radioactive tantalum were released onto the ground in the form of dust, small particles, and pellets during the Dugway testing. In contrast, radiological warfare would have required millions of curies per square



Radiological warfare weapons test target area at Dugway Proving Ground, Utah

mile to achieve its military purpose.[15] Toward the end of the program in 1952, there were plans to test a 100,000-curie device, but the program was severely curtailed, and the test of this prototype weapon did not take place.

Munition Tests

Eighteen field tests were conducted at Dugway Proving Ground by the Army Chemical Corps. Two of these examined the ability to decontaminate an area that had already been contaminated by previous field tests, and another field test examined the attenuation effects of various building materials (such as cinder block and plywood) on radiation levels. This test used a transient point source, leaving no residual radioactivity in the environment. A total of sixty-four munitions were used for all the tests.

The following is a list of field tests beginning in October 1949 and ending in September 1952 (also see table 1).

- The first radiological warfare munition test was conducted on 22 October 1949. The objective was to study how a radiological contaminant spreads when dispersed by a bomb. A 2,000-pound radiological bomb containing 260 curies of tantalum-182 was detonated.[16]

- A second munition test (Field Test 276) was conducted on 30 November 1949. Its objective was the same as the first, but this time the 2,000-pound radiological bomb contained 1,506 curies of tantalum-182.[17]

- Field Test 287 was an airburst test of a single 2,000-pound radiological bomb, E59R1, filled with radioactive tantalum particles. It was conducted on 4 August 1950. The objective of this test was to determine the effect of the type of explosive used on the dispersion of radioactive tantalum particles over large areas and to assess the radiation field produced, the airborne cloud generated, and the effect of weathering on the radioactive tantalum. The radiological material, tantalum-182, was activated to a level of 480 curies.[18]

- Field Test 288 occurred on 6 August 1950. It was a drop test of a single 2,000-pound radiological bomb, E59R2, filled with radioactive tantalum particles. The objective was to determine the effect of the type of explosive used in the 2,000-pound radiological bomb, E59R1, on the dispersion of radioactive tantalum particles over large areas and to assess the radiation field produced, the airborne cloud generated, and the effect of weathering on the contamination. The radioactive tantalum was activated to a level of 480 curies. The test was intended to be an airburst; however, due to mechanical malfunction, the bomb exploded on impact.[19]

- On 11 August 1950, Field Test 293 was conducted. It was a static test of four shaped-charge sections of radiological bomb, E59, filled with radioactive tantalum particles. The objective was to determine the effect of shaping the explosive charge used in the bomb on the dispersion of radioactive tantalum particles and to assess the radiation field produced. Each of the four bomb sections was loaded with 26 curies of radioactive tantalum, for a total of 104 curies.[20]

- Field Test 289 was conducted on 5 September 1950. It was an airburst test of a single radiological bomb, E65, filled with radioactive tantalum particles. The test objective was to determine the effect of the type of explosive used in the bomb on the dispersion of radioactive tantalum particles and to assess the field of radiation produced by the dispersal. The 2,000-pound bomb contained approximately 930 curies.[21]

- Field Test 290, conducted on 7 September 1950, involved an airburst test of a single

TABLE 1 RADIOLOGICAL WARFARE MUNITION TESTS CONDUCTED AT DUGWAY PROVING GROUND, UTAH, 1949 - 1952

Field Test Date(s)	Test Designation	Type of Test	# of Munitions	Radiological Agent Used	Approx. Curie Total
22 October 1949	None given	airburst	1	tantalum-182	260
30 November 1949	Field Test 276	airburst	1	tantalum-182 (90% wire, 10% particles)	1,506
4 August 1950	Field Test 287	airburst	1	tantalum-182	480
6 August 1950	Field Test 288	groundburst	1	tantalum-182	480
11 August 1950	Field Test 293	static	4	tantalum particles	104
5 September 1950	Field Test 289	airburst	1	tantalum particles	930
7 September 1950	Field Test 290	airburst	1	tantalum particles	3,900
13 September 1950	Field Test 292	static	15	tantalum oxide particles, tantalum chloride dust, agent RA	14
29 May 1951	Field Test 619	static	4	tantalum dust pellets	308
3-4 November 1951	Field Test 620	airburst	9	tantalum dust pellets	131
7 November 1951	Field Test 623	airburst	1	tantalum dust pellets	612
8 November 1951	Field Test 624	airburst	1	tantalum dust pellets	756
20 May 1952	Field Test RW 1-52	static	4	tantalum dust pellets (compressed)	1,405
23-27 May 1952	Field Test RW 2-52	airburst	16	99% tantalum dust, 1% molybdenum sulfide	640
23 September 1952	Field Test RW 1-53	static	4	tantalum pellets	2,164

2,000-pound radiological bomb, E65R2, with a water-cooled jacket, filled with radioactive tantalum particles. The test objective was to determine the effect of the explosive type on the dispersion of the radioactive tantalum particles over large areas and to assess the radiation field produced, the airborne cloud generated, the effect of weathering on contamination, and the effect of a water-cooled jacket for the bomb in relation to the above factors. The curie level was 3,900.[22]

- Field Test 292, conducted on 13 September 1950, involved static tests of experimental

radiological dust generators, E66R2 and E66R3, filled with radioactive tantalum oxide, radioactive tantalum chloride, and radioactive agent RA (an agent not specified in the report). The objective was to determine the feasibility of dispersing, as ground contamination over a small area, radioactive tantalum oxide particles, radioactive tantalum chloride dust, and radioactive agent RA by thermal generation. The objective was also to assess the radiation field produced and the airborne cloud generated. During this test, fifteen munitions were used and approximately 14 curies were emitted into the environment.[23]

- Field Test 619 was conducted on 29 May 1951. It was a static test of four full-diameter sectional munitions, E65 type, filled with compressed radioactive tantalum dust pellets. The test's objective was to determine the effect of shaping the explosive charge of the radiological bomb on the dispersion of the pellets. Each munition contained 77 curies, for a total of 308 curies.[24]

- Field Test 620 took place on 3 - 4 November 1951. It was an airburst test of nine spherical radiological munitions, E78R2 and E78R3. These munitions were filled with aerial pellet disseminators filled with radioactive tantalum dust, which burst at varying altitudes. In addition, three inert munitions containing no radiological material were dropped for practice. The objective was to establish the "area of responsibility" of these two types of individual munitions and to assess the radiation field produced. The nine munitions were filled with radiological material activated to a level between 8.5 and 17.3 curies each, for a total of 131 curies for the test.[25]

- Field Test 623 occurred on 7 November 1951. It was an airburst test of a 1,000-pound radiological bomb, E-83, filled with compressed radioactive tantalum dust pellets. The objective of the test was to determine the effect of varying the explosive and shaping the charge on the range and uniformity of dispersion of the pellets of compressed radioactive tantalum dust. The bomb contained 612 curies.[26]

- Field Test 624 was held on 8 November 1951. It was an airburst test of a 1,000-pound radiological bomb, E-83, filled with compressed radioactive tantalum dust pellets. The objective was the same as Field Test 623. The bomb contained 756 curies.[27]

- Field Test RW 1-52, on 20 May 1952, involved the static test of four segments of full-diameter sectional munitions. The objectives were to determine the effect of shaping the explosive charge of the modified radiological bomb on the dispersion of compressed pellets of radioactive tantalum dust and to assess the radiation fields produced. The activity of the radioactive tantalum in the munitions ranged from 275 to 404 curies, for a total of 1,405 curies.[28]

- Field Test RW 2-52 took place 23 - 27 May 1952. It was an airburst test of spherical radiological munitions containing radioactive tantalum. The objectives were to assess the radiation fields produced by individual spherical munitions filled with a radioactive agent when airburst at various altitudes and to determine the effect of weathering on the ground contamination. Sixteen active munitions were used in this field test. Before this test, six inert simulate munitions were dropped on 21 May 1952 to test the altitude at which they opened. The total activities of the radioactive tantalum in the spheres were calculated to be 38.9 to 40 curies, for a total of 640 curies.[29]

- Field Test RW 1-53 was conducted on 23 September 1952. It was a static test of full-

diameter sections of a radiological munition. The objectives were to determine the effect of shaping the explosive charge of one 1,000-pound radiological bomb, E83 type, on the dispersion and breakup of the agent and to determine the extent and intensity of the field radiation produced. The four functioning munitions contained a level of between 359 and 626 curies, for a total of 2,164 curies.[30]

Decontamination and Construction Studies

In addition to the munition studies, two decontamination studies and one building construction study were conducted during the years of the Dugway radiological warfare testing (see table 2). This latter test examined the attenuation effects of various building materials, such as cinder block and plywood, on radiation levels.

- Field Test 291, in August 1950, was designed to study gross decontamination of radioactive tantalum dispersed by a single radiological bomb. The radiological agent used in this test was the residue from the 30 November 1949 test (Field Test 276). No new contaminant was used. The objective was to determine the practicality of several proposed methods for gross decontamination of areas (either area wide or paths wide enough for the passage of troops) that were radiologically contaminated and to test the feasibility of decontamination of construction equipment used in contaminated areas.[31]

- Field Test 311 was conducted to test the effect of various types of construction on the intensity field produced by a radioactive tantalum source. A point source of radiological material was used; no residual radiological material was released into the environment. There were three tests, on 26 July, 31 August, and 1 September 1950, to determine the effectiveness of several types of common construction techniques as a shield to radiation exposure from a point source of radioactive tantalum-182.[32]

- Field Test RW 5-52 was conducted on 4 - 10 June 1952. It dealt with radiological warfare decontamination and land reclamation studies. No radiological material was released into the environment as a result of this field test. The objectives were to investigate the range of depths to which the pellets penetrate the soil, to determine the feasibility of locating individual radiological warfare pellets by means of gamma survey meter or by means of beta probe, to determine the feasibility of removing individual pellets and the time required for

TABLE 2 RADIOLOGICAL WARFARE DECONTAMINATION AND CONSTRUCTION EVALUATION FIELD TESTS CONDUCTED AT DUGWAY PROVING GROUND, UTAH, 1950 - 1952

Date of Field Test	Test Designation	Type of Field Test	Source of Contaminants
August 1950	Field Test 291	gross decontamination study	residue from 30 November 1949 field test
26 July 1950 31 August 1950 1 September 1950	Field Test 311	construction test	point source of tantalum-182
4-10 June 1952	Field Test DPG RW 5-52	decontamination and land reclamation studies	residue from previous field test

this operation, to obtain data on the performance of proposed land reclamation measures, and to evaluate waste collection and disposal procedures.[33]

The Joint Radiological Warfare Study Panel Reevaluation

The Noyes Panel, which presented its final report on 20 November 1950, reconvened for a short time in April 1952 to discuss the status of the radiological warfare program. The group evaluated the technical advances that had been made in the field of radiological warfare since the Joint Study Panel's last meeting in 1950. The group found there had been advancements in several categories: production of radiological warfare agents, dissemination of radiological warfare agents, and decontamination and defensive measures. There were no significant changes in the areas of new radiological warfare agent discovery, delivery, or biological effects. The panel decided that "no controversial technical problems have developed since the last Noyes Panel report."[34]

The Cancellation of the Offensive Radiological Warfare Program

The radiological warfare test program at Dugway Proving Ground continued until 1952, when the Chemical Corps expressed a wish to substantially expand the radiological warfare program. Increasingly larger tests, planned for 1953 and following years, would have needed vastly expanded facilities to maintain radioactive munitions.[35]

However, in 1953, the radiological warfare test program was canceled. Several reasons contributed to the program's discontinuation. There were questions relating to the actual need for a continuing radiological warfare program, and the expansion of the nuclear weapons arsenal made radiological warfare less necessary as an offensive measure. There were also budget cuts in military spending, which were necessary at the conclusion of the Korean War. As of 10 June 1953, the funding for the 1954 fiscal year had been extremely reduced. The planned budget of $4.33 million was reduced to $222,000.[36] This substantial loss of funds resulted in the Chemical Corps not going ahead with the expansion it was proposing.

Summary

The development of offensive weapons during World War II was critical, and in the beginning stages of the Manhattan Project the ability to construct an atomic weapon was not a certainty. Radiological warfare provided the U.S. military forces with another possible option. The capability of delivering a radiological contaminant into the environment to deny an enemy control over specific terrain would have been a potentially potent addition to the U.S. weapons arsenal.

The need to explore adequately the potentialities of radiological warfare and the fear that other nations might use this type of warfare motivated the research and development of the radiological warfare program. The tests conducted at ORSL and Dugway Proving Ground were intended to determine the best methods of radiological agent dispersal and damage capability. According to the Advisory Committee on Human Radiation Experiments:

> "Whatever public health hazard the [radiological warfare] tests at Dugway may have posed at the time, the radioactive decay of the tantalum caused the risks to dissipate over time. By 1960, no more than a few millicuries of tantalum remained, dispersed so widely that by this time it posed no conceivable human or environmental hazard."[37]

Notes

(To obtain copies of the following documents, see appendix 2.)

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2. Defense Nuclear Agency 6032F, "Operation CROSSROADS Report-1946," United States Atmospheric

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17. Preliminary Summary of Second RW Munition Test, Dugway Proving Ground, 13 December 1949.

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27. Ibid.

28. C. Glenvil Whitacre, Army Chemical Corps, Chemical and Radiological Laboratories, Interim Report, "Report of Field Test DPG RW 1-52, Static Test of Four Full-Diameter Sectional Munitions, E83 Type, Filled with Radioactive Compressed Tantalum Dust Pellets" (Maryland: Army Chemical Center, 2 July 1953); Technical Report, "Field Test DPGR 107 RW 1-52, Static Test of Sectional Munitions" (Dugway Proving Ground, 7 May 1953).

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CHAPTER 7

HUMAN ASPECTS RESEARCH & U.S. ATMOSPHERIC NUCLEAR WEAPONS TESTING

INTRODUCTION

Since 1994, the Department of Defense (DoD) has conducted an extensive search for records involving human use in ionizing radiation research and testing. As of the date of this publication, no documentation has been identified to indicate that human radiation experiments were part of the U.S. atmospheric nuclear weapons testing program. The Advisory Committee on Human Radiation Experiments (ACHRE) concluded in 1995 that, "although there was a real possibility that human subject research had been conducted in conjunction with the bomb tests, the tests were not themselves experiments involving human subjects."[1]

Human aspects research conducted in conjunction with atomic weapons tests was designed to study the effects atomic weapons would have on combat operations. For example, flashblindness studies, troop training and maneuvers, psychological testing, and decontamination studies were designed with the goal of increasing the capabilities and preparedness of military forces to conduct effective military operations on a nuclear battlefield. Cloud sampling and penetration were conducted to collect radiological samples from nuclear mushroom clouds, to gather radiochemical data, and to identify the potential risk to aircrews. This chapter describes this research.

BACKGROUND

When the Soviet Union detonated an atomic bomb in 1949, the monopoly of the United States as the sole nuclear power came to an end. In view of this, the DoD realized it would be necessary to create countermeasures for both personnel and equipment to conduct operations on a contaminated battlefield. First, the effects of atomic warfare on military operations had to be identified.[2] Effects included contaminated fallout from the "mushroom cloud," flashblindness or dazzle created by the fireball, and the psychological stress on personnel from a nuclear detonation. Second, after the effects were identified, defensive or avoidance techniques had to be developed to minimize or eliminate the threat.

The primary objective of the U.S. atmospheric nuclear weapons test program was to develop and improve nuclear weapons.[3] However, some of the tests were conducted to evaluate nuclear weapons effects. Such weapons tests offered an opportunity to determine the effects on military operations and to develop and test equipment, operational doctrine, and the tactics to be used by U.S. forces in a nuclear environment. Personnel participated in field exercises which were conducted in conjunction with the weapons tests.

HUMAN INVOLVEMENT

Development of Military Operations on a Nuclear Battlefield

Approximately 210,000 personnel participated in U.S. atmospheric nuclear weapons tests.[4] Their participation included observing the explosion, test operations, and tactical maneuvers on a simulated battlefield following a nuclear detonation. Personnel

Terms/Acronyms Used in This Chapter	
AEC	Atomic Energy Commission [predecessor of the Department of Energy]
afterimage	temporary image formation remaining on the retina from over stimulation
dazzle	to overpower the vision with very bright light
DoD	Department of Defense
fallout	the descent to earth of radioactive particles, as after a nuclear explosion; the particles themselves
flashblindness	describes both dazzle (a condition where extremely bright light temporarily impairs vision) and afterimage (temporary image formation remaining on the retina from over stimulation)
gamma ray	an electromagnetic radiation of great penetrating power, emitted by the nucleus of a radioactive substance
ground zero	place of detonation
ionizing radiation	(see appendix 4)
mushroom cloud	the cloud produced by an atomic explosion, forming a unique mushroom shape
night vision	vision that has adapted to low light levels
NTPR	Nuclear Test Personnel Review
rad	(radiation absorbed dose) a dosage of absorbed radiation equal to the absorption of 100 ergs of energy per gram of material

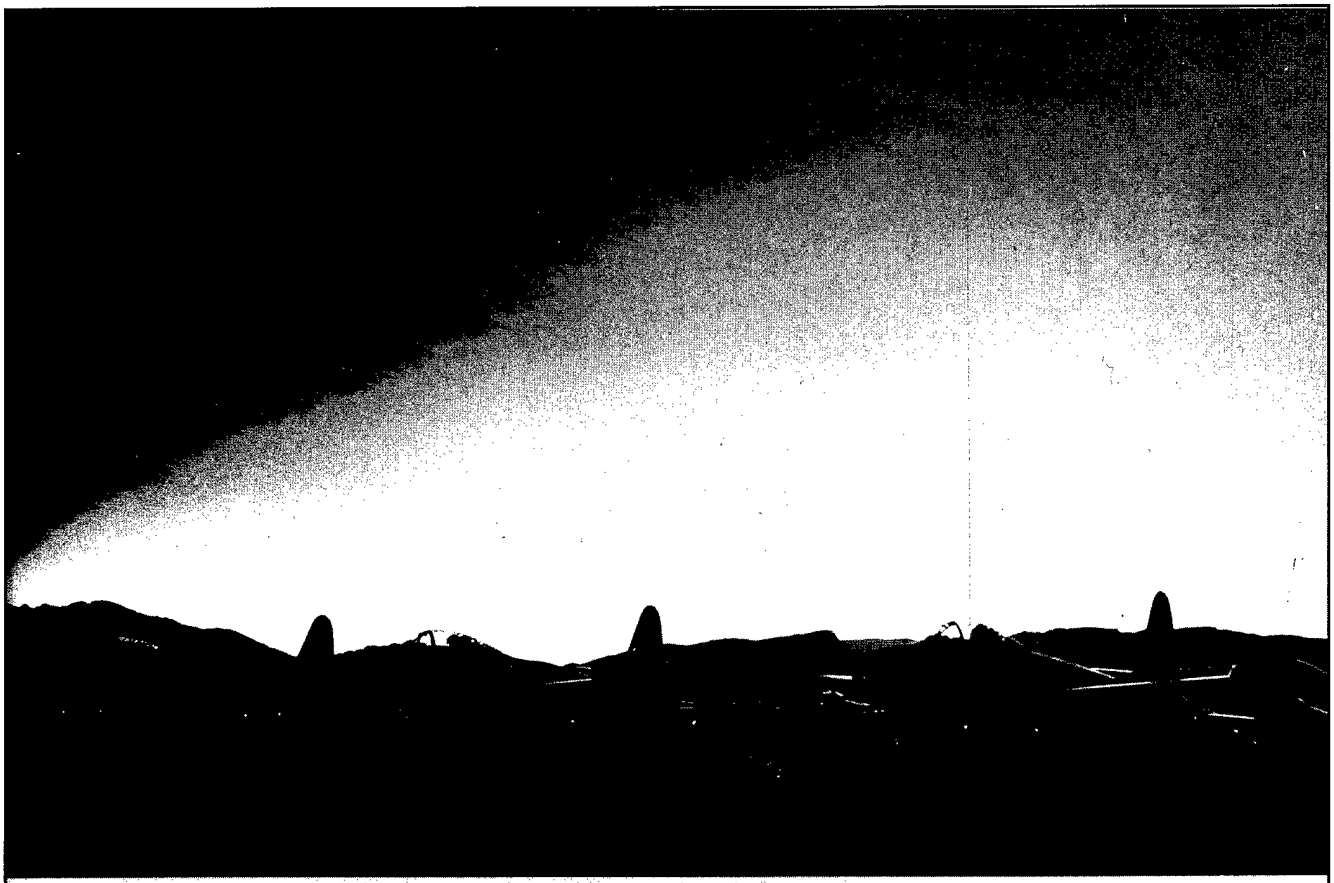
from all the services, primarily the Army, participated in a series of field maneuvers called "Desert Rock." The purposes of these exercises included conducting field maneuvers, evaluating the effects of a nuclear detonation on field fortifications and equipment, measuring the ability to estimate target damage, observing psychological responses to nuclear detonations, and radiological safety training. During these exercises, service members first received training on nuclear weapons and their effects and how to survive and operate on a nuclear battlefield. After the blast, some troops executed maneuvers toward ground zero from trenches. Others were airlifted by helicopter to the vicinity of ground zero after detonation to test air mobile operations around and through a contaminated and cluttered battlefield. The results of these exercises were used to refine and improve military operations on a nuclear battlefield. Decontamination procedures also were used and tested.

Some service members were administered psychological tests to determine the effectiveness of briefings about the atomic bomb. The purpose of such testing was to determine if troops had been given adequate information that they could understand and use in performing safely on a nuclear battlefield.[5]

Visual Effects

The Armed Services were confronted with the problem of temporary loss of vision as a result of exposure to visible light emitted by a nuclear detonation. The term "flashblindness" was used to describe both dazzle (a condition in which extremely bright light temporarily impairs vision) and afterimage formation from retinal stimulation.[6] The danger to the eye from an atomic detonation lies in the increased light the eye receives, which can be as much as 50 times the light a pupil constricted by daylight admits. There is an even greater effect on pupils that are already dilated, such as when adapted to night vision. There was also concern that the elimination of night-adapted vision caused by intense illumination from a nuclear detonation at night could severely distort peripheral vision in critical situations.

The flashblindness project was conducted during Operations BUSTER-JANGLE,



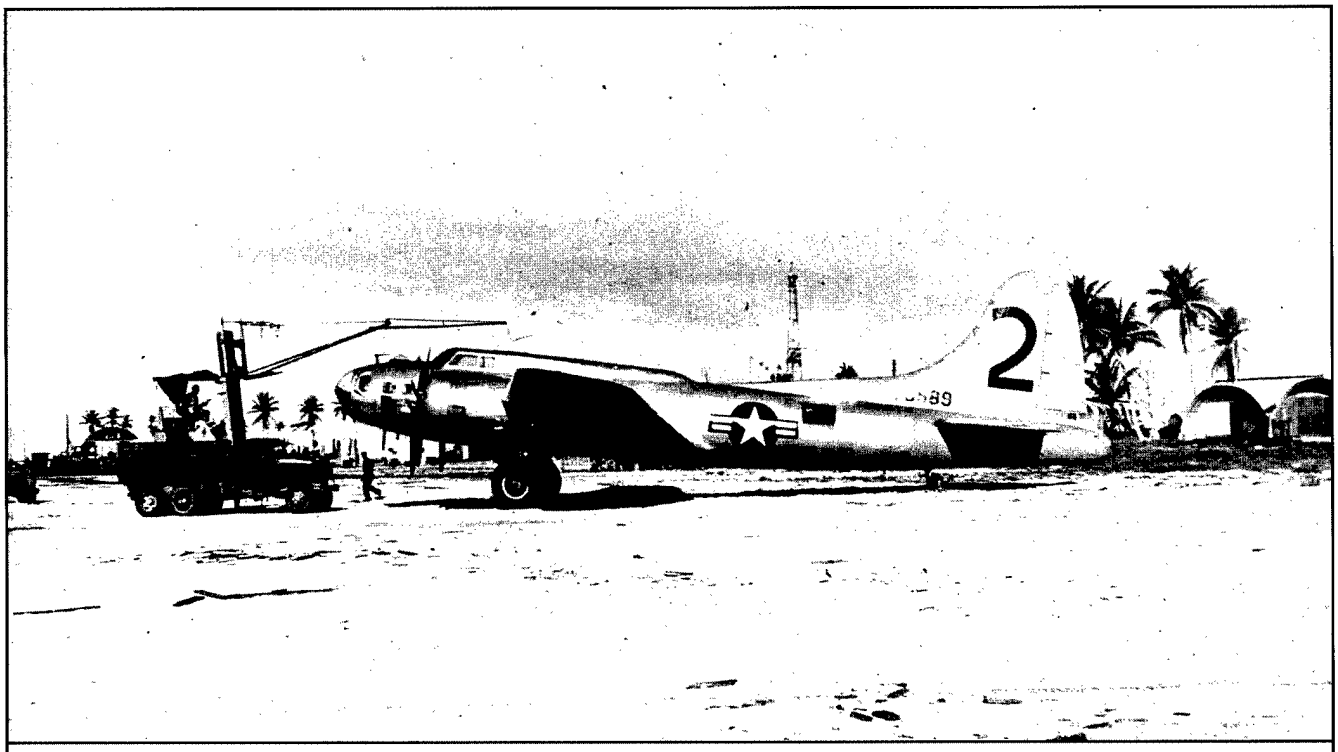
Intensity of the flash of the detonation of an atomic bomb at night. The intensity of the flash could cause temporary blindness to those unprotected.

TUMBLER-SNAPPER, UPSHOT-KNOTHOLE, PLUMBBOB, HARDTACK II, and DOMINIC I. The flashblindness project examined the ability of filters to decrease the effects of flashblindness on ground troops and aircrews.

Three types of visual tasks were considered for the flashblindness program: (1) reading red-lighted instruments in ships, aircraft, and vehicles; (2) acuity of central vision; and (3) peripheral vision at low light levels. Aircrews increasingly relied on central vision in performing operational tasks, whereas ground soldiers relied on peripheral vision to detect form and movement in night combat tasks.[7]

Researchers designed studies to estimate the usefulness of a specific filter combination for dazzle protection. Typically, service members whose eyes had been adapted to the dark looked at the initial flash of an atomic bomb for a period of time equal to the blink reflex. Red filters were found to curb the high short-wave content of the early part of detonation flash and thus aid recognition of red-lighted instruments. It was concluded that aircrews would benefit from using red filters in the event of atomic flashes within a few miles at night.[8]

Flashblindness researchers concluded that the temporary loss of vision from dazzle did not cause permanent damage to the eyes.[9] With proper training, coping with temporary vision loss was found to be a surmountable obstacle. Tests showed that permanent eye damage was possible when the detonation was viewed directly; when the detonation was viewed indirectly, the possibility of permanent damage was minimized.[10] In viewing a detonation either directly or indirectly, vision was temporarily impaired. Field



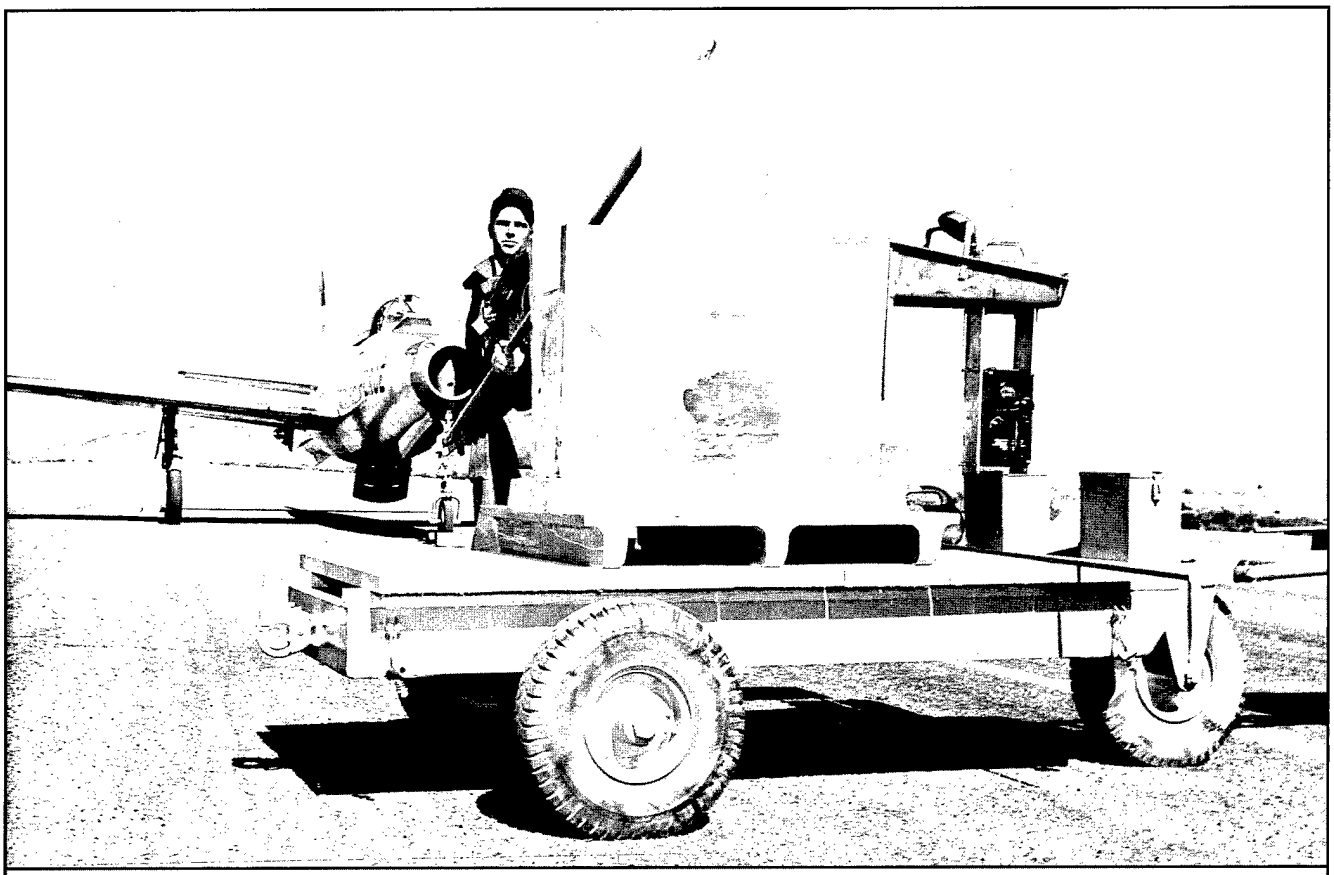
"Box" filter being removed from a B-17 "drone" cloud sampling aircraft

and laboratory flashblindness experiments with human subjects continued into the 1960s and 1970s and led to the development of equipment for improved eye protection.

Nuclear Cloud Penetration Studies

The Air Force conducted mushroom cloud sampling flights after nuclear weapons tests for several reasons. One was to obtain samples that could be used by the weapons designers to analyze the performance and efficiency of the weapon's design. Obtaining samples provided diagnostic information to the weapons design laboratories. A second reason was to collect samples from mushroom clouds of nuclear detonations performed by other nations. The purpose of this information was of intelligence value in determining the nature of other countries' nuclear weapons development programs.[11] A third reason, which is discussed here, was to fly through a mushroom cloud to measure the radiation dose and dose rates. The Air Force needed the ability to estimate the impact of contamination within a cloud layer to judge the hazards of flying into a mushroom cloud.[12] This information was critical to the Air Force for two reasons: (1) to determine the hazards to pilots who may have to fly through mushroom clouds either during a cloud sampling mission or during a nuclear war and (2) to determine what decontamination procedures would be required if the aircraft became radioactive after passing through these clouds. These studies would also help in identifying requirements for additional protective equipment for personnel and machinery.

The Air Force initially conducted unmanned experimental mushroom cloud penetration missions. However, manned aircraft soon replaced the cumbersome and unreliable remote-controlled aircraft, known as drones, which did not provide the quality of mushroom cloud samples required. In these cloud penetration studies, some air crew flew through mushroom clouds to determine if there was a radiation threat; others flew in or around the clouds

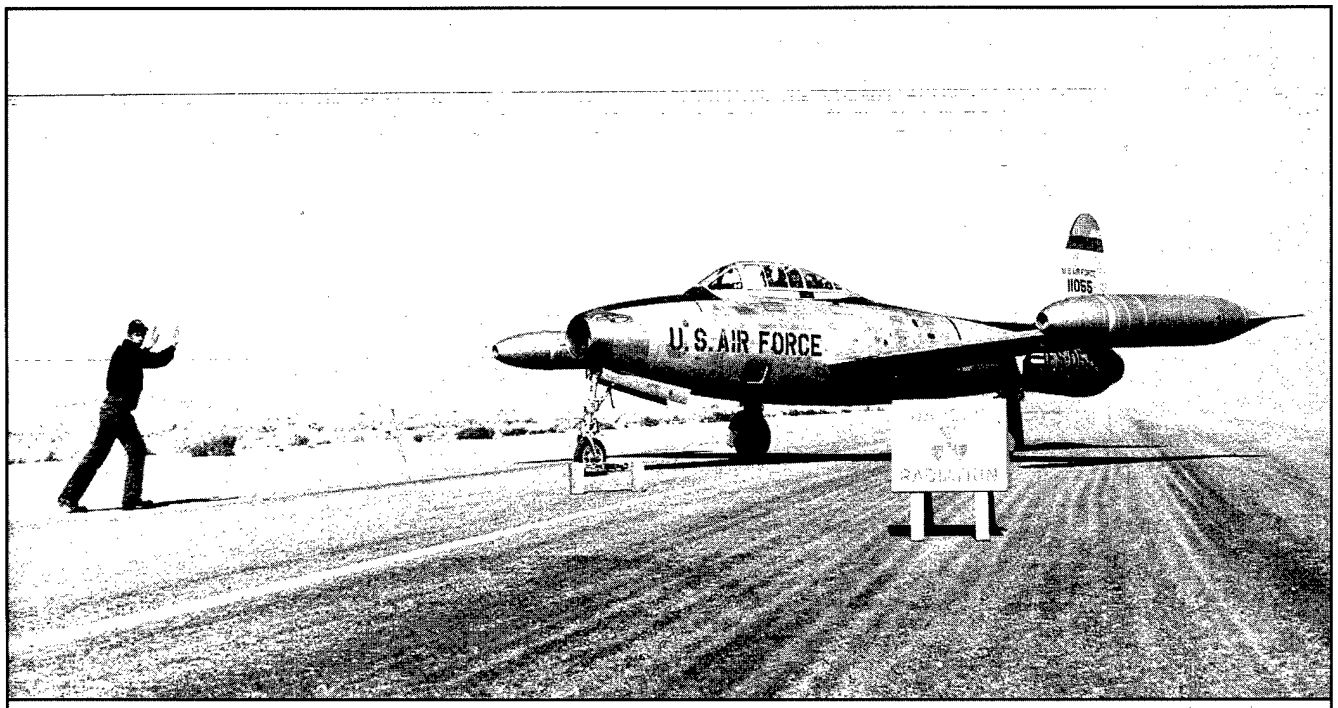


Cloud sampling filter being placed on a cart after being removed from a F-84 sampling aircraft

to gather additional data from the radioactive clouds. The radiation doses that aircrews received during passage through and around the cloud and conditions of the flight inside the cloud and on the return flight were pertinent in the safety planning for aircrews and aircraft.[13]

One objective of the studies involved measuring the radiation dose either from inhaling or swallowing radioactive particles while flying through a mushroom cloud. External radiation dose rates experienced in mushroom clouds were often dangerously high, sometimes 1,800 rads per hour. However, because aircraft did not linger in the cloud, the total dose was much less, but there was concern whether internal doses paralleled these external readings. These cloud penetration tests were able to provide distinction between internal and external doses received during a mushroom cloud penetration flight. Test data showed that the radiation dose within the body was nearly the same as the dose on the skin surface and indicated that aircraft did not have to be specially modified to filter out airborne particles that could be inhaled by aircrews.[14]

The second objective of the studies was to determine the radiological contamination the aircraft might acquire from flying through or around the mushroom cloud and the extent of the radiation exposure from this contamination to the ground crews who serviced these aircraft. The studies demonstrated that the major risk to ground crews came from residual radiation deposited on both external aircraft surfaces and internal aircraft parts. The major deposition point for such residual radiation was in the engines, which drew in the radioactive fallout as the aircraft traveled through the mushroom cloud.[15] As a result of this and other studies, decontaminating aircraft after passage through a mushroom cloud was deemed necessary to



Air Force F-84 being directed to a holding area to await decontamination. The aircraft had been on a cloud sampling mission. Upon landing, the aircraft was surveyed for radioactivity and found to exceed acceptable levels.

remove residual radiation. Aircraft returning from missions involving mushroom cloud penetration were required to be checked for radioactivity to determine if decontamination was necessary.

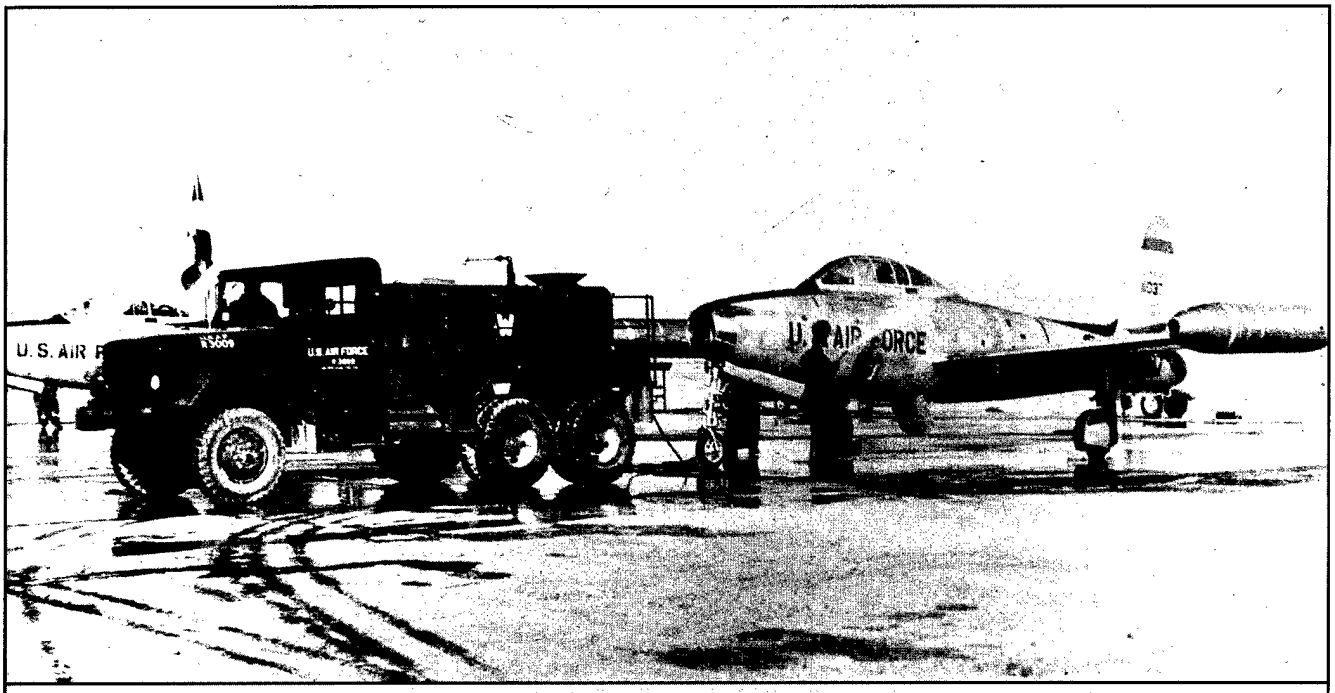
The historical narrative "History of Air Force Atomic Cloud Sampling" provides an in-depth overview of the complete cloud sampling operation.[16]

Epilogue

The ACHRE *Final Report* stated that ACHRE: "reviewed the historical record to determine if human experiments had taken place in connection with these tests. We found that somewhere in the range of 2,000 to 3,000 military personnel at the tests did serve as the subjects of research in connection with the tests. In most cases, these research subjects were engaged in activities similar to those engaged in by many other service personnel who were not research subjects. For example, some air crew flew through atomic clouds in experiments to measure radiation absorbed by their bodies, but many others flew in or around atomic clouds to gather data on radiation in the clouds. The Department of Defense generally did not distinguish such research from otherwise similar activities, treating both as part of the duties of military personnel. The experience of atomic veterans illustrates well the difficulty in locating the boundary between research involving human subjects and other activities conducted in occupational settings that routinely involve exposure to hazards."[17]

For More Information

In 1978, the DoD established the Nuclear Test Personnel Review (NTPR) program to serve as a source of public information for personnel participating in these tests. The NTPR program is responsible for identifying DoD personnel who participated in U.S. atmospheric nuclear tests and for determining their radiation doses. This program provides participants with confirmation of their



Air Force F-84 undergoing decontamination after flying through an atomic mushroom cloud

participation, their associated radiation dose, and the availability of health care and compensation programs. Contact the NTPR program at the Defense Special Weapons Agency, Attn: ESN/NTPR, 6801 Telegraph Road, Alexandria, VA 22310-3398, or by calling 1-800-462-3683.

Notes

(To obtain copies of the following documents, see appendix 2.)

1. Advisory Committee on Human Radiation Experiments, *Final Report* (Washington, D.C.: U.S. Government Printing Office, Oct. 1995), p. 455.

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5. Peter A. Bordes et al., "Desert Rock I: A Psychological Study of Troop Reactions to an Atomic Explosion [HumRRO-TR-1]," February 1953.

6. OPERATION HARDTACK, "Project 4.3, Effect of Light from Very-Low-Yield Nuclear Detonations on Vision (Dazzle) of Combat Personnel," April – October 1958, Headquarters Field Command, Defense Atomic Support Agency, p. 9.

7. Victor A. Byrnes et al., "Ocular Effects of Thermal Radiation from Atomic Detonations — Flashblindness and Chorioretinal Burns, Project 4.5," School of Aviation Medicine, 30 November 1955, p. 3.

8. OPERATION UPSHOT-KNOTHOLE, Summary Report of the Technical Director, March–June 1955, Headquarters Field Command, Armed Forces Special Weapons Project, p. 141.

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16. Ibid.

17. Advisory Committee on Human Radiation Experiments, *Final Report*, pp. 455–456.

CHAPTER 8

FOOD IRRADIATION

INTRODUCTION TO IRRADIATED FOOD STUDIES

Food irradiation studies, sponsored by the Army Quartermaster General, were part of the "Atoms-for-Peace" initiative of the mid-1950s and continued until 1980. The Atoms-for-Peace program was initiated by President Eisenhower in 1956 to generate research and development on constructive, peaceful uses of atomic energy.[1] This program, along with the War-on-Hunger program, was strongly supported by Congress and the Department of Defense (DoD).

The purposes of irradiating food were to sterilize foods intended for use as field rations, extend shelf life under nonrefrigerated conditions, and make food preparation easier in combat situations while keeping the Army well nourished. Human testing of irradiated food began in 1956 after several years of animal testing revealed no health risks. These tests were not considered human-use tests; no food used in these studies became radioactive as a result of the irradiation.[2] These food irradiation studies were conducted only to gauge the soldiers' reactions to the sensory characteristics of the irradiated foods. Today, the use of food irradiation to eliminate microorganisms and to extend shelf life is a common practice in several fields of food processing and packaging in commercial and military food preparation.

BACKGROUND

The concept of food irradiation was initially developed by the Atomic Energy Commission (AEC) immediately following World War II. In 1952, the DoD expressed interest in a food irradiation program.

In February 1954, the National Research Council's Subcommittee on Radiological Sterilization assigned the Quartermaster Corps, Department of the Army, the task of investigating the technical aspects of the radiological sterilization and preservation of foods.[3] This task was conducted in close coordination with the AEC, which supplied the sterilization testing reactor and radiation source used for irradiating foods. Many other governmental organizations became involved in food irradiation studies during the following years. The Army also sponsored laboratory studies of irradiated foods at approximately eighty universities and industrial organizations throughout the country during the 1950s.[4]

The logistical requirements to keep an Army in combat situations well fed for prolonged periods necessitated more efficient food storage and preparation procedures. At the time, field rations required refrigeration, spoiled quickly, were cumbersome to transport, and sometimes required a lot of water or cooking time for preparation. Food irradiation was seen as a means to address these concerns. The sterilization of grain and grain products with heat and the control of parasites in grain, although possible, were limited in their applicability due to how the foods were stored. The DoD sponsored research in food irradiation to determine the feasibility of using ionizing radiation (such as gamma rays and electrons) instead of heat to kill or inactivate micro-organisms that cause food spoilage. Ultimately, the benefits of the irradiation process would include, "a reduction in refrigeration requirements, reduced food losses, improved control of certain food-borne diseases, and a wider availability of fresh foods under field conditions."[5]

Laboratory tests of irradiated foods were conducted on rats, dogs, and monkeys at various universities and industrial organizations. After extensive animal tests did not reveal any harmful

Terms/Acronyms Used in This Chapter	
AEC	Atomic Energy Commission [predecessor to the Department of Energy
cobalt-60	a radioactive isotope used in the treatment of cancer
DoD	Department of Defense
FDA	Food and Drug Administration
gamma radiation	electromagnetic, rather than charged particle, radiation; highly penetrating
ionizing radiation	see appendix 4
irradiate	to expose to or treat by exposing to x-rays, ultraviolet rays, radium, or some other form of radiant energy
pasteurization	a method of destroying disease-producing bacteria by heating the liquid to a prescribed temperature for a specified period of time
sterilization	to free from living microorganisms, as by subjecting to great heat or chemical action
TECOM	Army Test and Evaluation Command
World War II	1939-1945, fought between the Allies (Great Britain, France, the Soviet Union, Canada, and the United States as well as other nations) and the Axis (Germany, Italy, Japan and other countries)

effects, the protocol for human taste testing was established in 1954. By 1956, more than 100 foods had been laboratory tested and were approved for further human subject testing using both civilian and military volunteer personnel.[6]

Human Testing of Irradiated Foods

Human volunteer tests were conducted to determine the sensory characteristics—taste, texture, and appeal—of the irradiated meats, fruits, and vegetables. The Army Test and Evaluation Command (TECOM) administered the tests through the Quartermaster Corps at the U.S. Army Natick Research, Development, and Engineering Center in Natick, Massachusetts. Much of the human taste testing was also done for psychological reasons to calm public fears of irradiated foods.[7]

The first Army-sponsored human subject study of irradiated food took place in 1956 at the Army Medical Research and Nutrition Laboratory, Fitzsimons Army Hospital, in Denver, Colorado. The participants were Mennonite volunteers: eighteen conscientious objectors, between eighteen and twenty-two years old, who were fulfilling their obligation to the Government by serving in the Armed Forces as test volunteers for an eighteen-month period. Before their participation, the men were given a thorough briefing that provided a history of the program and an explanation that the food was not radioactive and that previous animal toxicity testing had been negative. Before participating, they filled out informed consent forms that included participation in two-year liability insurance policies from the University of Colorado. Complete physical examinations were administered just before, during, and at three, six, and twelve months after the studies were completed.[8]

Seven separate studies were conducted at Fitzsimons Army Hospital, each lasting approximately thirty days. During each test period, the participants were divided into two groups of equal size. One group received meals that included irradiated food, while the other group ate meals with no irradiated food. After approximately fifteen days, the test administrators switched the group that was fed untreated meals with the group that ate irradiated food, so each group ate equal amounts of irradiated food. To maintain the control population and get a more accurate indication of the acceptance of the irradiated foods, the men were not told which foods they were eating.[9] A period of several months elapsed

between the studies to prevent accumulation of possible toxic effects. This testing procedure was used in most of the subsequent irradiated food studies.

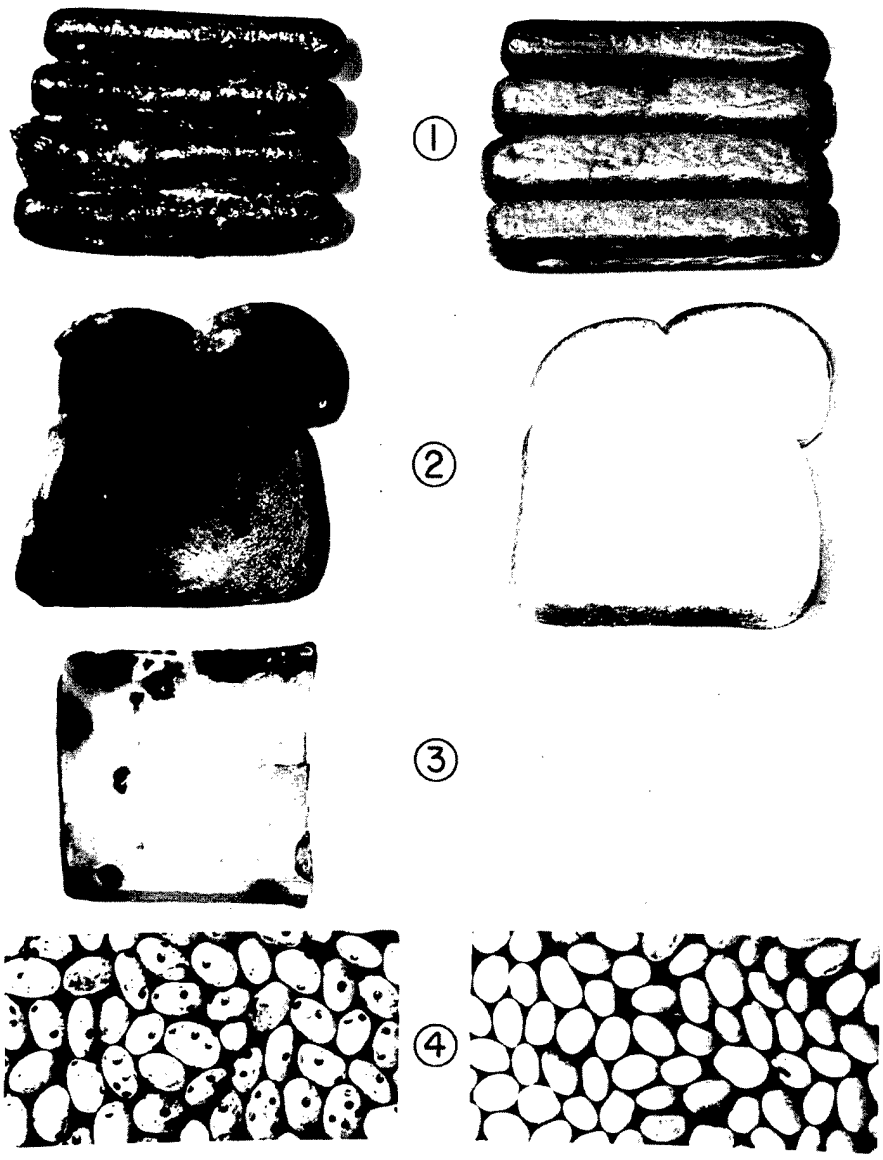
The first four studies tested foods that had been kept in a frozen state until they were prepared and consisted of 35 percent, 60 percent, 80 percent, and 100 percent irradiated foods, progressively.[10] Eighteen men participated in these tests, which began in summer 1956 and consisted of taste-testing forty-two food items. The fifth study, conducted in spring 1957, specifically tested the acceptability of irradiated pork that had been stored at room temperature for one year. The sixth and seventh studies, completed in November 1957 and March 1958, investigated eighteen foods that had been stored at room temperature for three months. Thirteen men participated in these two tests.

Follow-Up Studies

Several follow-up studies were conducted at Fitzsimons Army Hospital. A four-month duration test based on a diet of 100 percent irradiated food was planned to begin on 1 March 1959. The volunteers for these tests were Mennonite conscientious objectors.[11] These follow-up tests were designed as new techniques of irradiation were developed to be conducted on foods that had not been acceptable to the test subjects in previous studies. However, these further studies were not well documented, and the current data on them are limited.

Letterman Army Medical Center at the Presidio Army Base in San Francisco, California, was the site of several initial and follow-up food irradiation taste tests. The testing techniques and procedures used at Fitzsimons Army Medical Nutrition Laboratory were also used at Letterman. The currently available information on the testing conducted at Letterman Army Medical Center does not contain data on the

Potatoes being irradiated during a food preservation study. This process did not cause the food itself to become radioactive. Rather, it destroyed organisms which would have caused spoilage of the food. This process lengthened the storage life of these foods.



Food test samples depicting effectiveness of irradiation as a preservation process. Food on the right had been irradiated, whereas the food on the left had not. Both samples had been left unprotected for the same period of time. Food on the left shows signs of spoilage, whereas the food on the right does not. Food items are sausage, bread, cheese, and beans.

foods that were tested, the testing methods used, or the number of participants.

After the initial success of these small-scale human subject irradiated food studies, the Army increased the size and scope of the program. Many large-scale food irradiation studies were conducted at Fort Lee, Virginia, Fort Lewis, Washington, and Marine Corps installations on the island of Okinawa from 1958 through the mid-1970s. Personnel involved in these studies were volunteer enlisted men at each site.

The irradiated food taste tests conducted at Fort Lee began in February 1958. Approximately two weeks before these tests began, a series of lectures on the subject of radiation preservation was presented to approximately 2,000 enlisted men, representing most of the 543rd Quartermaster Group, the 9111th Detachment 2, and the Quartermaster School. These lectures were designed to acquaint as many people as possible with the general historical background and progress in the use of radiation to preserve food. The men were told that the irradiated food program was not classified and that all who participated would not only be allowed but encouraged to tell their friends and relatives that they participated in the test. Following each lecture, personnel were surveyed to determine whether they would be willing to participate in the program on a volunteer basis.[12]

The Army's Office of the Surgeon General handled the medical supervision of the participants

and laboratory preparation of the irradiated food. All study volunteers at Fort Lee were given physical examinations two weeks before ingesting irradiated food. From the personnel who volunteered for the first study and successfully passed the physical examinations, a group of 240 men was selected to participate. Only 139 volunteers from this group actually ate irradiated food; the remaining men served as the control population. Records indicate that these volunteers were served a meal that included irradiated bacon and pork along with non-irradiated foods on 25 April 1958.[13]

The second series of tests, consisting of two three-day studies, tested the sensory reactions to six irradiated foods. The first of these studies took place on 3, 6, and 10 November 1958 and had 139 volunteers; the second study on 1, 4, and 8 December 1958 had 87 volunteers. As with the first study, after consuming each meal, the participants were asked to fill out nine-point scaled questionnaires on the sensory characteristics of the food, including the texture, taste, and palatability.[14]

Test procedures called for follow-up physical examinations to be given to participants immediately, after six weeks, and three months after eating the irradiated food. However, the three month post-irradiation tests were deemed unnecessary because no ill effects from the irradiated food ingestion were discovered during the previous physicals. In January 1959, after the second phase of testing at Fort Lee was complete, a report on the medical aspects of the program noted, "[t]o date, of the 598 volunteers examined, there has been no evidence from our examinations to suggest any effects attributable to consumed irradiated food."[15]

Similar testing procedures were used for all the follow-up taste tests of irradiated foods that were administered at Fort Lee, Fort Lewis, and the Marine installations on Okinawa through the mid-1970s. Several other food irradiation taste tests were conducted at many other DoD facilities around the country, but these generally involved fewer troops and were shorter in duration. In 1960, the Food and Drug Administration (FDA) granted approval for the use of a broad class of irradiated foods for general consumption by Army troops.[16] The administration of the continuation of the food irradiation program was directed by the U.S. Army Natick Research, Development, and Engineering Center, in Natick, Massachusetts, where several follow-up taste tests were conducted.

Most of the additional testing was done to get a more accurate indication of the potential broad acceptance and use of irradiated foods. It was eventually determined that the radiation pasteurization process, which used doses that would delay spoilage, when used in conjunction with refrigeration[17] did not affect the sensory qualities of foods as much as the radiation sterilization procedure. This was found to be the case first with fruits and vegetables and was eventually applied to all irradiated foods. However, because the DoD's intention with the food irradiation program was to prolong the shelf life of meats and high-protein foods, the DoD continued to research and improve on the radiation sterilization process. The development of new and more efficient irradiation techniques (e.g., replacing gamma with electron radiation) also warranted additional testing of irradiated foods. The development of portable radiation sources was

Sterilization versus Pasteurization

Sterilization

Sterilization is primarily used for long-term preservation of meats and meat by-products in an uncooked or unfrozen state. These foods require a high dose of radiation to kill, or inactivate, the microorganisms that cause spoilage. The preservation of foods by sterilization and the foods irradiated by this method are currently being researched for approval by the Food and Drug Administration.

Pasteurization

Pasteurization is used for highly perishable food, primarily fruits and vegetables, that require a low dose of radiation to extend shelf-life and kill, or inactivate, the microorganisms that cause spoilage. The pasteurization method leaves the food nearly indistinguishable from non-irradiated food. The irradiation pasteurization procedure is commonly used on fruits and vegetables commercially available today.

important because the foods could be irradiated close to their source. Before this, most of the food was frozen, thawed just before irradiation, and then refrozen for shipping, which added to the development of undesirable textures and tastes.[18] The study administrators at Natick eventually discovered that if the foods were kept very cold (at -40° C) during the sterilization process, the undesirable effects of the radiation treatment were virtually eliminated. The Army also attempted to keep up with the dietary guideline changes. As these needs changed over the years, food irradiation studies were continued for sterilization and pasteurization purposes and to extend shelf life.

Summary

The food irradiation program started by the Army in the 1950s was administered with no reported health effects to the participants. Many people and ideas were involved in the effort to increase the efficiency of the Army in the 1950s and 1960s. The food irradiation program was an integral part of this effort. Taste-test studies similar to those of the past have continued into the present on foods produced with new packaging and preservation techniques. To a large extent, the food irradiation programs conducted at Fitzsimons Army Hospital, Letterman Army Medical Center, Fort Lee, Fort Lewis, and the Marine Corps installations on Okinawa were in the forefront of the effort to improve quality and shelf life of food and, in turn, the quality of food available for military personnel.

Notes

(To obtain copies of these documents, see appendix 2.)

1. Ad Hoc Working Group of the Interdepartmental Committee on Radiation Preservation of Foods, A National Civilian Radiation Processed Foods Program, January 1960, pp. 16, 17; Budget message of President Dwight D. Eisenhower to the Congress of the United States, January 1956.

2. Ibid, p. 11

3. Draft Letter, to Lewis L. Strauss, Chairman, Atomic Energy Commission, from Robert LeBaron, Chairman, Military Liaison Committee, 10 February 1954, p. 1.

4. Interdepartmental Committee on Radiation Preservation of Food, Draft Second Report, p. 11 A.

5. Draft Press Release, "Army Troops to Test Palatability of Foods Preserved by Irradiation," 7 April 1958, p. 3.

6. Interdepartmental Committee on Radiation Preservation of Food, Draft Second Report, pp. 16–18.

7. Ad Hoc Working Group, A National Civilian Radiation Processed Foods Program, p. 15.

8. Memorandum, to The Quartermaster General of the Army, from Brig. Gen. Joseph McNinch, Special Assistant for Research & Development Affairs, Office of the Army Surgeon General, 2 October 1959, pp. 2–3.

9. Capt. Virginia E. McGary et al., Acceptability of Irradiated Food Consumed by Humans (Fitzsimons Army Hospital, Colorado: U.S. Army Medical Nutrition Laboratory, 15 March 1957), p. 1.

10. Research Division, Office of the Chief of Research & Development, Office of the Army Chief of Staff, "Status of the U.S. Army Radiation Preservation of Food Program," July 1957, p. 2.

11. Interdepartmental Committee on Radiation Preservation of Food, Draft Second Report, p. 18.

12. Summary of Irradiated Food Studies conducted by the Office of the Quartermaster General, 1958, p. 1, and Enclosure 1, Troop Orientation, p. 2.

13. Capt. C. D. Moore, USA, Human Consumption of Irradiated Food–Medical Aspects (Fort Lee, Va.: Quartermaster Research and Engineering Command, 22 January 1959), p. 1.

14. Interdepartmental Committee on Radiation Preservation of Food, Draft Second Report, p. 19.

15. Capt. C. D. Moore, Human Consumption of Irradiated Food, p. 2.

16. Ad Hoc Working Group, A National Civilian Radiation Processed Foods Program, p. 15.

17. Interdepartmental Committee on Radiation Preservation of Food, Draft Second Report, p. 13.

18. Ad Hoc Working Group, A National Civilian Radiation Processed Foods Program, p. 21.

APPENDIX 1

RESULTS OF DoD HUMAN RADIATION EXPERIMENT RECORDS SEARCH

On 15 January 1994, Executive Order (EO) 12891[1] identified human radiation experiments (HRE) in the following manner:

> (1) Experiments on individuals involving intentional exposure to ionizing radiation. This category does not include common and routine clinical practices, such as established diagnosis and treatment methods, involving incidental exposures to ionizing radiation.
>
> (2) Experiments involving intentional environmental releases of radiation that (a) were designed to test human health effects to ionizing radiation; or (b) were designed to test the extent of human exposure to ionizing radiation.

Using the definitions in the EO, the Department of Defense (DoD) established guidance to search its records. The search criteria had three components that a project had to satisfy to be considered a possible human radiation experiment: (1) there had to be human subject involvement, (2) there had to be an experimental component, and (3) radiation had to be involved in some way. During the records search, if there was doubt as to whether a record completely satisfied all three of these components, the guidance was to err on the side of inclusion. Dr. Harold P. Smith, Jr., Assistant to the Secretary of Defense (Atomic Energy), stated,

> For the purpose of this initial identification of possible experiments, organizations submitting reports should err on the side of inclusion. Reported activities that are outside the scope of the records search can then be excluded prior to actual records retrieval.[2]

Many of the records identified were not experimental but concerned projects that used radiation only as an evaluation or diagnostic tool.

The determination of whether a procedure was experimental was often difficult to make. In its *Final Report*, The Advisory Committee on Human Radiation Experiments (ACHRE) concluded:

> In a medical setting, it is sometimes hard to distinguish a formal experiment designed to test the effectiveness of a treatment from ordinary medical care in which the same treatment is being administered outside a research project. The patient receiving the treatment may discern no difference between the two.... Similarly, in an occupational setting in which employees are put at risk, it is often difficult to distinguish formal scientific efforts to study effects on the health of employees from routine monitoring of employees' exposure to hazards in the work place for the purposes of ensuring worker safety.[3]

The boundaries among medical, clinical, occupational, and experimental exposures are often blurred and difficult to precisely discern. In compiling the list of possible radiation experiments, the DoD was often faced with the same dilemma of trying to discern a true experiment from medical treatment. For this reason, the policy to err on the side of inclusion was implemented to ensure that every possible experiment was identified and received close scrutiny in evaluating its true intent.

Approximately 2,600 projects and studies were initially identified and reported to the Radiation Experiments Command Center (RECC) and the

Acronyms and Definitions Used in This Chapter	
ACHRE	Advisory Committee on Human Radiation Experiments
AFMPC	Armed Forces Medical Policy Council
AFRRI	Armed Forces Radiobiology Research Institute
DHEW	Department of Health, Education, and Welfare
DSWA	Defense Special Weapons Agency
DNA	Defense Nuclear Agency [now DSWA]
DoD	Department of Defense
HRE	Human Radiation Experiment
RECC	Radiation Experiments Command Center

ACHRE by the DoD. These projects occurred between 1944 and 1994 and were provided by the Army, Navy, Air Force, Defense Special Weapons Agency (DSWA), and the Armed Forces Radiobiology Research Institute (AFRRI). This appendix is a listing of approximately 2,400 projects and studies sponsored or conducted by the DoD. This lower number is the result of eliminating studies that were proposed but not performed as well as duplicate submissions from the original 2,600.

The list is arranged in two parts. The first part lists projects that took place between 1944 and 1974, and the second section lists projects that occurred between 1975 and 1994. This division is consistent with the approach taken by the DoD and the other represented agencies of the Human Radiation Interagency Working Group to focus the investigation on HRE conducted before the establishment of the Federal "Common Rule" (see appendix 2). The basic principles of the Common Rule were adopted by the Department of Health, Education, and Welfare (DHEW) in 1974.

What Information Is Displayed

1944 – 1974

These years define the period on which the Interagency Working Group and ACHRE focused to determine the degree of governmental involvement in HRE. Approximately 500 projects have been identified that occurred during these years. The list in this section is organized by the sponsoring or conducting service, the facility, organization or location name where the projects were conducted, the start date, the RECC identification number, the project title, a brief abstract drawn from available information relating to the experiment, and a list of documents obtained by the services that pertain specifically to the experiment. In some instances, a document associated with the project will be identified as an "event profile." This is a summary developed by the reporting service/agency from their own records to describe the project. In other instances, a document associated with the project will be identified as a "search printout." This is the result of online database searches for journal articles and reports related to specific studies. In some of the 1944 – 1974 projects, the RECC was unable to compile a complete description. In these instances, a notation has been made in the project entry that if this information becomes available, it will be provided in volume 2 to this publication.

1975 – 1994

Approximately 1,900 projects were reported to the RECC for these years as possibly involving human use in ionizing radiation experiments. This number is greater than the actual number of experiments due to DoD's policy to err on the side of inclusion. Included are duplicate reporting, clinical investigations and treatments, and other routine uses of radiation that, on later examination, were determined to be appropriate nonexperimental uses of radiation. As opposed to the 1944-1974 listing, there are no abstracts. There is only a topical

description of the projects. This is outside the original search period but the projects are included here in order to provide full accounting of all reports provided the ACHRE.

How to Find a Specific Project

The approximately 2,400 projects from 1944 to 1994 reported here are the result of an intensive review of documents in many archives, records centers, libraries, medical centers, and other records repositories. To assist in finding a specific project, the information is listed as follows:

1. Alphabetically by service or agency which sponsored the project
2. Then alphabetically by site name (facility, organization or location name)
3. Lastly, chronologically by year.

Please note: Some projects were ***sponsored*** by one service or agency but ***conducted*** at another service's facility. For example, the Air Force reported a project that it sponsored but which was conducted at the Walter Reed Army Medical Center. This project is listed in the Air Force section since it was an Air Force project. However, a person looking for this project would look, logically, in the Army section since it was held at an Army facility. However, it would not be there. For this reason, if the project you are searching for is not found in one service section, it is suggested you search all the other sections.

Notes

(To obtain copies of the following documents, see appendix 2.)

1. Executive Order 12891, "Advisory Committee on Human Radiation Experiments," 15 January 1994, p. 2.

2. Memorandum from Harold P. Smith, Jr., Assistant to the Secretary of Defense (Atomic Energy), 31 January 1994, attachment "Specific Direction for Locating Records of DoD Human Radiation Experiments," p.3.

3. Advisory Committee on Human Radiation Experiments, *Final Report* (Washington, D.C.: U.S. Government Printing Office, October 1995), pp. 10–11.

1944 – 1974 Human Radiation Experiments, Projects, Studies as Reported by the Services and DoD Organizations

Air Force 1944-1974

Antioch College, Yellow Springs, OH

Start Date	Number	Title
1956	**AF0094**	**Sizing system for high altitude gloves**

Abstract: From 1956 until a presently undetermined date, researchers from Antioch College in Yellow Springs, OH; Wright-Patterson Air Force Base in Dayton, OH; and Lockbourne Air Force Base, OH collected x-rays of both left and right hands to construct a database of hand measurements for sizing high-altitude gloves. Four hundred eleven male active duty military personnel from Wright-Patterson and Lockbourne Air Force bases and thirty-eight civilians participated in this study. Results of this study are not available at this time.

Documents: Authors: James T. Barter; Milton Alexander. Title: A Sizing System for High Altitude Gloves. Document Type: Report. Date: December 1956

Start Date	Number	Title
1962	**AF0093**	**X-ray anthropometry of the hand**

Abstract: In 1962, researchers from Antioch College in Yellow Springs, OH, analyzed x-rays of both left and right hands to construct a database of hand measurements. Existing x-rays from 253 male active duty military personnel from Wright-Patterson and Lockbourne Air Force bases (91 percent) and civilians were examined. This retrospective study used existing x-ray films and did not involve new radiation exposure.

Documents: Author: Joan Haskell Vicinus. Title: X-Ray Anthropometry of the Hand. Document Type: Report. Date: September 1962

Arctic Village, AK

Start Date	Number	Title
1955	**AF0011**	**Thyroid activity in men exposed to cold using I-131**

(For further information see Chapter 4—"Iodine-131 Study Conducted by the Arctic Aeromedical Laboratory.")

Documents: Title: Human Acclimatization and Adaptation to Arctic Cold; with attached personnel roster. Document Type: Report. Date: 18 November 1955

Authors: Kaare Rodahl, M.D., Director of Research; Gisle Bang, D.D.S., Department of Physiology. Title: Thyroid Activity in Men Exposed to Cold, Technical Report 57-36. Document Type: Report. Date: October 1957

AIR FORCE 1944-1974 (CONTINUED)

Arctic Village, AK (continued)

From: Ann B. Cox, Ph.D., Research Physiologist, Radiofrequency Radiation Division. To: Larry Farlow, HSC/PA. Subject: "Thyroid Activity in Men Exposed to Cold" (TR 57-36). Document Type: Memorandum. Date: 25 January 1994

Authors: National Research Council, Institute of Medicine. Title: The Arctic Aeromedical Laboratory's Thyroid Function Study: A Radiological Risk and Ethical Analysis. Document Type: Book. Date: 1996

Baylor University College of Medicine, Houston, TX

Start Date	Number	Title
1954	**AF0031**	**Changes in proteolytic and antiproteolytic activity of the blood serum in man and animals following x-rays**

Abstract: From 1954 to a presently undetermined date, researchers from Baylor University College of Medicine in Houston, TX examined the effects of x-ray irradiation on serum proteolytic and anti-proteolytic activity. Thirty-six cancer patients participated in the study; eight received local x-rays, and twenty-eight received whole-body irradiation while participating in a study at MD Anderson Hospital for Cancer Research in Houston, TX. Results of this study are not available at this time.

Documents: From: USAF SAM 3J. To: Commanding General, Air Materiel Command, Wright-Patterson Air Force Base. Subject: Negotiation of Cost Reimbursement Contract (for Project 21-47-002). Document Type: Memorandum. Date: 1 September 1950

Authors: Kenneth L. Burdon, Ph.D.; Rufus K. Guthrie, M.S. Title: Changes in the Proteolytic and Antiproteolytic Activity of the Blood Serum in Man and Animals Following Exposure to X-Rays. Document Type: Report. Date: February 1954

Title: Abbreviated Progress Report: Dose Response Relationships Between Morphine and N-Allylnormorphine Under Varying Conditions. Document Type: Report. Date: 3 May 1956

Brooke Army Medical Center, Houston, TX

Start Date	Number	Title
Unknown	**AF0057**	**Identification and significance of parotid fluid corticosteroids: tritiated cortisol & aldosterone**

Abstract: From a presently undetermined date until 1963, this study was conducted at the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX. Researchers established a method for measuring 17-hydroxycorticosterone (17-OHCS) in saliva from the parotid gland. This method permitted noninvasive continuous assessment of adrenal hormone levels during studies evaluating adrenal response to stress. Eleven research participants included active duty military personnel, pregnant women, DoD dependents, and patients. Radiation exposures are unavailable at this time. Intravenously administered cortisol was shown to appear in parotid fluid

AIR FORCE 1944 – 1974 (CONTINUED)

Brooke Army Medical Center, Houston, TX (continued)

rapidly, and parotid 17-OHCS levels were reliable indicators of adrenal function. Studies with a patient with Cushing's syndrome and others with underactive adrenals supported this conclusion. Despite a large rise in plasma 17-OHCS in the third trimester of pregnancy, there was only a small (though significant) rise in parotid fluid 17-OHCS. Chemical and radioisotopic techniques showed cortisone to be the major parotid fluid 17-OHCS. Radioactive aldosterone, estrogens, and androgens also appeared in parotid fluid after intravenous injection.

Documents: Authors: F. H. Katz, Capt., USAF, MC; I. L. Shannon, Maj., USAF, DC. Title: Identification and Significance of Parotid Fluid Corticosteroids. Document Type: Report. Date: 1963

David Grant Medical Center, Travis AFB, CA

Start Date	Number	Title
1972	**AF0006**	**Noninvasive assessment of coronary artery disease: myocardial imaging with rubidium-81 and the scintillation camera**

Abstract: From 1972 to 1975, researchers from the David Grant Medical Center at Travis Air Force Base, CA investigated imaging techniques useful in identifying significant coronary artery disease. Noninvasive myocardial imaging studies using potassium-43 and/or rubidium-81 were done at rest and during exercise. Four hundred eleven patients participated. This technique was superior to other contemporaneous techniques in its sensitivity and specificity. Refinements in technique and changes in the radionuclide used improved the overall sensitivity to 90 percent. Radiation exposures are not available at this time.

Documents: Authors: Peter J. Hurley et al. Title: KCl: A New Radiopharmaceutical for Imaging the Heart. Journal: *Journal of Nuclear Medicine.* Document Type: Journal Article. Date: Unknown

Authors: J. S. Clark, Col., USAF, MC, Deputy Commander. Subject: Additional Information (forwarding protocol "The non-invasive assessment of coronary artery disease...Patency). Document Type: Memorandum. Date: 10 March 1971

Authors: Benjamin R. Baker, Col., USAF, MC, Deputy Director of Professional Services, Office of the Surgeon General. Subject: Clinical Investigation Proposal #389: The Noninvasive Assessment of Coronary Artery Disease. Document Type: Memorandum. Date: 22 March 1972

Author: Barry L. Zaret, Maj., USAF, MC. Title: Interim Report: Clinical Investigation Proposal #389: The Noninvasive Assessment of Coronary Artery Disease. Document Type: Report. Date: 12 June 1972

Author: George E. Reynolds, Brig. Gen., USAF, MC, Director of Professional Services, Office of the Surgeon General. Title: Clinical Investigation Proposal #389, Phase II. Document Type: Report; Memorandum. Date: 28 September 1972

From: J. N. Steelman, Capt., USAF, Chief, Accounting and Finance Branch. To: Accounting and Finance Office. Subject: Letter of Authority, Number 73-19. Document Type: Letter. Date: 27 October 1972

Author: George E. Reynolds, Brig. Gen., USAF, MC, Director of Professional Services, Office of the Surgeon General. Subject: Clinical Investigation Proposal #389: Noninvasive Assessment of Coronary Artery Disease. Document Type: Memorandum. Date: 30 January 1973

AIR FORCE 1944 – 1974 (CONTINUED)

David Grant Medical Center, Travis AFB, CA (continued)

Author: Evan W. Schear, Col., USAF, MC, Commander. Title: Interim Report and Phase III Proposal: Clinical Investigation Proposal #389—Noninvasive Assessment of Coronary Artery Disease. Document Type: Report; Proposal. Date: 30 January 1973

Authors: Maj. Barry L. Zaret, USAF, MC et al. Title: Noninvasive Regional Myocardial Perfusion with Radioactive Potassium. Journal: *The New England Journal of Medicine*, vol. 288, issue 16. Document Type: Journal Article. Date: 19 April 1973

From: Clifford R. Pollock, Col., USAF, MC, Deputy Director of Professional Services, Office of the Surgeon General. To: MAC/SGPE. Subject: Amendment to AF Permit 2-0008(173). Document Type: Memorandum. Date: 30 April 1973

Title: MPI Myocardial Scintigraphin. Document Type: Report. Date: April 1973

Title: Request for Amendment to AF Permit, Rubidium 81 [includes reference articles and two cover memorandums]. Document Type: Memorandum; Journal Article. Date: April 1973

From: Neil D. Martin, Col., USAF, MC, Chief Nuclear Medicine To: SGHRR/3098. Subject: Proposal for Clinical Investigation [Noninvasive Assessment of Coronary Artery Disease: Myocardial Imaging with Rubidium-81 and the Scintillation Camera. Includes Protocol]. Document Type: Memorandum. Date: 16 July 1973

Authors: Maj. H. William Strauss, USAF, MC et al. Title: Noninvasive Evaluation of Regional Myocardial Perfusion with Potassium 43. Journal: *Radiology,* vol. 108. Document Type: Journal Article. Date: July 1973

Authors: [Illegible]. Title: Proposal for Clinical Investigation: "Noninvasive Assessment of Coronary Artery Disease and Noninvasive Assessment of Coronary Artery Disease: Myocardial Imaging with Rubidum-81 and the Scintillation Camera." Document Type: Proposal. Date: 1 August 1973

Title: Clinical Investigation Protocol Progress Reports. Document Type: Log; List. Date: 1 August 1973

Authors: Ronald L. McGowan, Col., USAF, MC, Director, Professional Education. Title: Interim Report: Clinical Investigation Proposal 389—Noninvasive Assesment of Coronary Artery Disease–30 July 73. Document Type: Report. Date: 2 August 1973

From: George E. Reynolds, Brig. Gen., USAF, MC, Director of Professional Services, Office of the Surgeon General. To: [Illegible]. Subject: Request for Investigational Use of Drugs. Document Type: Memorandum. Date: 10 September 1973

Authors: Barry L. Zaret, Maj., USAF, MC et al. Title: Potassium-43 Myocardial Perfusion Scanning for the Noninvasive Evaluation of Patients with False-Positive Exercise Tests. Journal: *Circulation*, vol. XLVIII. Document Type: Journal Article. Date: December 1973

Authors: Neil D. Martin, Col., USAF, MC, Chief, Nuclear Medicine. Title: Proposal for Clinical Investigation: Non-Invasive Assessment of Coronary Artery Disease: Myocardial Imaging with Rubidium 81 and the Scintillation Camera. Document Type: Proposal. Date: 1973

From: Vincent T. Penikas, Lt. Col., USAF, BSC, Secretary, USAF Radioisotope Committee. To: SGPR. Subject: Clinical Investigation Proposal No. 389: The Noninvasive Assessment of Coronary Artery Disease. Document Type: Letter. Date: 14 February 1974

From: George E. Reynolds, Brig. Gen., USAF, MC, Director of Professional Services, Office of the Surgeon General. To: SGPA. Subject: Clinical Investigation Proposal No. 389: The Noninvasive Assessment of Coronary Artery Disease. Document Type: Memorandum. Date: 1 March 1974

From: Evan W. Schear, Brig. Gen., USAF, MC, Commander. To: HQ USAF/SGPA. Subject: Clinical Investigation Proposal No. 389: The Noninvasive Assessment of Coronary Artery Disease [Memorandum with Funding Request and Interim Report.] Document Type: Memorandum. Date: 13 March 1974

AIR FORCE 1944 – 1974 (CONTINUED)

David Grant Medical Center, Travis AFB, CA (continued)

Authors: Barry L. Zaret, Maj., USAF, MC et al. Title: Rest and Exercise Potassium-43 Myocardial Perfusion Imaging for the Noninvasive Evaluation of Aortocoronary Bypass Surgery. Journal: *Circulation*, vol. XLIX. Document Type: Journal Article. Date: April 1974

Authors: Col. Neil D. Martin, USAF, MC et al. Title: Rubidium-81: A New Myocardial Scanning Agent. Journal: *Radiology*, vol. 111. Document Type: Journal Article. Date: June 1974

Authors: Col. Neil D. Martin, USAF et al. Title: Myocardial Imaging Using 43K and the Gamma Camera. Journal: *Radiology*, vol. 112. Document Type: Journal Article. Date: August 1974

From: Ronald L. McGowan, Col., USAF, MC, Chief, Nuclear Medicine. To: SG. Subject: Interim Report on Clinical Investigation Proposals #389 and #499 and Proposal for Incorporation into an Integrated Project. Document Type: Memorandum. Date: 15 April 1975

From: Evan W. Schear, Brig. Gen., USAF, MC, Commander. To: HQ USAF/GGPR. Subject: Interim Report on Clinical Investigation Proposals # 389 and #499 and Proposal for Incorporation into an Integrated Project. Document Type: Memorandum. Date: 15 April 1975

Authors: Ronald L. McGowan, Col., USAF, MC; Neil D. Martin, Col., USAF, MC, Chief of Nuclear Medicine. Title: Interim Report in Phase V Proposal: Incorporated Clinical Investigation Proposals #389 and #499, Noninvasive Assessment of Coronary Artery Disease by Radioisotopic Techniques. Document Type: Report. Date: 28 April 1975

From: [Illegible]. To: [Illegible]. Subject: Clinical Investigation Proposal #389 and 499. Document Type: Memorandum. Date: 10 June 1975

Author: Ernest J. Clark, Brig. Gen., USAF, MC, Director of Professional Sevices, Office of the Surgeon General. Subject: Clinical Investigation Proposals #389 and #499. Document Type: Memorandum. Date: 10 June 1975

Title: Final Report on the Incorporated Clinical Investigation Proposals #389, Noninvasive Assessment of Coronary Artery Disease, and #499, Noninvasive Assessment of Coronary Artery Disease: Myocardial Imaging with Rubidium-81 and the Scintillation Camera. Document Type: Report. Date: 14 September 1976

Authors: Ronald L. McGowan, M.D. et al. Title: Noninvasive Myocardial Imaging with Potassium-43 and Rubidium-81 in Patients with Left Bundle Branch Block. Journal: *The American Journal of Cardiology*, vol. 38. Document Type: Journal Article. Date: October 1976

Author: Clifford R. Pollock, Col., USAF, MC, Deputy Director of Professional Services, Office of The Surgeon General. Title: Clinical Investigation Proposal #389, Phase IV, The Noninvasive Assessment of Coronary Artery Disease. Document Type: Memorandum. Date: Unknown

Author: Clifford R. Pollock, Col., USAF, MC, Deputy Director of Professional Services, Office of the Surgeon General. Subject: Clinical Investigation Proposal #499: Noninvasive Assessment of Coronary Artery Disease Myocardial Imaging with Rubidium 81 and Scintillation Camera. Document Type: Memorandum. Date: Unknown

Start Date	Number	Title
1973	**AF0007**	**Effects of perhexiline maleate upon regional myocardial perfusion and extent of transient myocardial ischemia assessed by potassium-43**

Abstract: From 1973 to 1975 researchers at David Grant Medical Center at Travis Air Force Base, CA investigated the effectiveness of perhexiline maleate (a coronary vasodilator) in improving blood

AIR FORCE 1944 – 1974 (CONTINUED)

David Grant Medical Center, Travis AFB, CA (continued)

flow to the heart muscle. Nine patients with myocardial ischemia, identified by performing myocardial perfusion scans, participated. Drug effects were assessed by monitoring exercise capacity on treadmill stress tests and measuring the extent of myocardial ischemia by potassium-43 perfusion scans. Perhexiline reduced the frequency of anginal episodes by at least 50 percent in six of the nine subjects.

Documents:

Authors: Maj. Barry L. Zaret, USAF; Lt. Col. M.D. Flamm, Jr., USAF, MC; Col. Neil D. Martin, USAF, MC. Title: The Effects of Perhexiline Maleate upon Regional Myocardial Perfusion and the Extent of Transient Myocardial Ischemia as Assessed by Potassium-43 Myocardial Perfusion Imaging. Document Type: Proposal. Date: 7 February 1973

Authors: Maj. Barry L. Zaret, USAF et al. Title: Noninvasive Regional Myocardial Perfusion with Radioactive Potassium; Study of Patients at Rest, with Exercise and During Angina Pectoris. Journal: *New England Journal of Medicine*, vol. 288, issue 16. Document Type: Journal Article. Date: 19 April 1973

Authors: Maj. H. William Strauss, USAF, MC et al. Title: Noninvasive Regional Myocardial Perfusion with Potassium-43, Technique in Patients with Exercise Induced Transient Myocardial Ischemia. Journal: *Radiology*, vol. 108. Document Type: Journal Article. Date: July 1973

From: Brig. Gen. Evan W. Schear, USAF, MC, Commander. To: MAC/SG; HQAMD/RD. Subject: Proposal for Clinical Investigation: The Effects of Perhexiline Maleate upon Regional Myocardial Perfusion and the Extent of Transient Myocardial Ischemia as Assessed by Potassium-43 Myocardial Perfusion Imaging. Document Type: Memorandum. Date: 3 August 1973

Author: Maj. Barry L. Zaret, USAF. Title: Potassium-43 Myocardial Perfusion Scanning for the Noninvasive Evaluation of Patients with False-Positive Exercise Tests. Journal: *Circulation*, vol. XLVIII. Document Type: Journal Article. Date: December 1973

From: Lieutenant Col. Melvin D. Flamm, Jr., USAF, MC, Chief, Cardiology Section. To: SG. Subject: Proposal for Clinical Investigation: The Effects of Perhexiline Maleate upon Regional Myocardial Perfusion and the Extent of Transient Myocardial Ischemia as Assessed by Potassium-43 Myocardial Perfusion Imaging. Document Type: Memorandum. Date: 1973 est.

Authors: Maj. Barry L. Zaret, USAF et al. Title: Rest and Exercise Potassium-43 Myocardial Perfusion Imaging for the Noninvasive Evaluation of Aortocoronary Bypass Surgery. Journal: *Circulation*, vol. XLIX. Document Type: Journal Article. Date: April 1974

Authors: Col. Neil D. Martin, USAF, MC et al. Title: Rubidium-81: A New Myocardial Scanning Agent; Noninvasive Regional Myocardial Perfusion Scanning at Rest and Exercise and Comparison with Potassium-43. Journal: *Radiology*, vol. 111. Document Type: Journal Article. Date: June 1974

Authors: Col. Neil D. Martin, USAF, MC et al. Title: Myocardial Imaging Using K-43 and the Gamma Camera. Journal: *Radiology*, vol. 112. Document Type: Journal Article. Date: August 1974

From: Col. Clifford R. Pollock, USAF, MC, Deputy Director of Professional Services. To: Lieutenant Col. Carter. Subject: Approval of Clinical Investigation Proposal #500: The Effects of Perhexiline Maleate upon Regional Myocardial Perfusion and the Extent of Transient Myocardial Ischemia as Assessed by Potassium-43 Myocardial Perfusion Imaging. Document Type: Memorandum. Date: 25 September 1975

Authors: Maj. Stephen V. Savran, USAF, MC et al. Title: Clinical Research Report on the Effects of Perhexiline Maleate upon Regional Myocardial Perfusion and the Extent of Transient Myocardial Ischemia as Assessed by Potassium-43 Myocardial Perfusion Imaging [includes forwarding memorandum]. Document Type: Report. Date: September 1975

AIR FORCE 1944 – 1974 (CONTINUED)

David Grant Medical Center, Travis AFB, CA (continued)

Authors: Ronald L. McGowan, M.D., FACC; Thomas G. Welch, M.D., FACC; Barry L. Zaret, M.D., FACC; Andrew L. Bryson, M.D.; Neil D. Martin, M.D.; M. D. Flamm, M.D., FACC. Title: Noninvasive Myocardial Imaging with Potassium-43 and Rubidium-81 in Patients with Left Bundle Branch Block. Journal: *The American Journal of Cardiology*, vol. 38. Document Type: Journal Article. Date: October 1976

From: Monica Easley, Research Protocol Manager; Meade Pimsler, Maj., USAF, BSC, Acting Director, Clinical Investigation Facility. To: HQ AFMOA/SGPT. Subject: Advisory Committee on Human Radiation Experimentation [search for protocols before 1974 at the Clinical Investigation Facility]. Document Type: Memorandum. Date: 19 October 1994

Start Date	Number	Title
1974	**AF0005**	**Tumor localization using gallium-67 citrate**

Abstract: From 1974 to 1976, researchers at the David Grant Medical Center at Travis Air Force Base, CA evaluated gallium-67 (Ga-67) citrate as a tumor imaging technique for cancer diagnosis. Sixty-seven cancer patients participated. Ga-67 citrate was used to reveal the extent of cancer, to determine the effectiveness of different chemotherapeutic agents, and to identify infection and abscess formation. No adverse reactions were noted. Ga-67 was approved as a drug for abscess and tumor imaging studies.

Documents:

Author: Monte D. Miller, Col., USAF, MC. Title: Clinical Investigation of Gallium 67. Document Type: Proposal. Date: 16 October 1974

From: Ernest J. Clark. To: Capt. Wood. Subject: Change in Research Protocol. Document Type: Memorandum. Date: 20 October 1974

Author: Clifford Pollock, Col., USAF, MC. Title: Clinical Investigations Proposal #575: Tumor Localization Using Gallium 67. Document Type: Proposal. Date: 12 December 1974

Author: Monte D. Miller, Col., USAF, MC, Commander. Title: Progress Report on Clinical Investigation Proposal #575. Document Type: Report. Date: 1975

Author: Darryl T. Manland. Title: Change in Research Protocol. Document Type: Protocol. Date: 17 September 1976

Title: Final Close-out Summary of Clinical Investigation Proposal #575. Document Type: Report. Date: 1976

Eye Research Foundation of Bethesda, Bethesda, MD

Start Date	Number	Title
1969	**AF0043**	**Threshold for permanent functional and morphological visible damage in humans**

Abstract: From 1969 to 1970 researchers from the Eye Research Foundation in Bethesda, MD and Walter Reed General Hospital in Washington, DC studied the effects of high-intensity light on the retina. Exposure to a xenon arc lamp, which provided a source of simulated solar radiation, was used to assess the energy density required to produce retinal burns visible with an ophthalmoscope.

AIR FORCE 1944 – 1974 (CONTINUED)

Eye Research Foundation of Bethesda, Bethesda, MD (continued)

Six patients who were having surgery to remove an eye for intraocular tumors participated in the study. Exposure to the xenon arc lamp lasted between 0.25 and 1.5 seconds. The thresholds for retinal burns for brown-eyed and blue-eyed patients were significantly different. Threshold burn data from the four brown-eyed patients seemed to fit one curve, while the data from the two blue-eyed patients showed that they both had a much higher burn threshold. Because burn thresholds are dependent on the degree of pigmentation of the RPE, this may suggest that iris color is an indicator of the degrees of RPE pigmentation.

Documents: Authors: Stephen Elgin, M.D.; David O. Robbins, Ph.D.; Carl R. Cavonius, Ph.D. Title: Threshold for Permanent Functional and Morphological Vision Damage in Human Retina Using Visible Radiation. Document Type: Report. Date: May 1971

Fort Sam Houston, TX

Start Date	Number	Title
1973	**AF0098**	**Effects of staging on the acute adaptation to high terrestrial elevations**

Abstract: From 1973 until a presently undetermined date, researchers from the School of Aerospace Medicine in Colorado Springs, CO investigated methods of pretreatment for acute mountain sickness (AMS) at Fort Sam Houston in San Antonio, TX and Pikes Peak in Colorado Springs, CO. Sixty active duty military participants were staged at intermediate elevations before final ascent. Researchers also examined the development of AMS during short-term exposures in a hypobaric chamber. Chest x-rays were taken. Radiation exposures and results of this study are not available at this time.

Documents: Title: Effects of Staging on the Acute Adaptation to High Terrestrial Elevations. Document Type: Report. Date: 1973 est.

Frenchay Hospital, Bristol, England

Start Date	Number	Title
1966	**AF0079**	**Clinical study of gastroesophageal reflux**

Abstract: From 1966 to 1967, researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX measured the backward flow of stomach and duodenal contents into the esophagus in an attempt to understand the normal and abnormal function of the gastroesophageal junction and remedy abnormal physiology. One hundred fifty patients from Frenchay Hospital in Bristol, England and Massachusetts General Hospital in Boston, MA, in addition to twenty-five patients from the USAF School of Aerospace Medicine and Wilford Hall USAF Hospital participated in this study. Intermittent fluoroscopy with x-ray exposures of less than two minutes (well within the safe limits) were used to observe nasogastric tube positioning.

AIR FORCE 1944 – 1974 (CONTINUED)

Frenchay Hospital, Bristol, England (continued)

Researchers felt that the best surgical principles for the restoration of the physiology of the gastroesophageal region included placement of an adequate length of lower esophagus in an intra-abdominal position and anchoring it, creating a gastroesophageal flap valve by making an exaggerated angle and restoring close approximation of the diaphragm to the lower esophagus.

Documents: Authors: Capt. David B. Skinner; Maj. Thomas F. Camp, Jr.; Capt. Donald J. Booth. Title: Evaluation and Treatment of Gastroesophageal Reflux. Document Type: Report. Date: 12 March 1968

Hospital Saint-Louis, Paris, France

Start Date	Number	Title
1964	**AF0107**	**Control of secondary syndrome following whole-body irradiation treatment with bone marrow**

Abstract: From 1964 until 1968 researchers from the Hospital Saint-Louis, Paris,France investigated secondary syndrome in mice and man to understand its mechanism and to develop preventive methodologies. During the study, twenty-four leukemic patients were administered bone marrow transfusion following irradiation exposure. All patients were suffering from acute lymphoblastic leukemia, some were in remission, others were in a visible phase. Patients were totally irradiated using cobalt-60, the first six patients with a source of 1,800 curies delivering three to four rads per minute, and others by two sources (3,000 or 4,000 curies) delivering between five and six rads per minute. The total dose was fractionated in two equal sessions separated by twenty-four hours. In seventeen cases, a viable bone marrow graft was demonstrated and seven cases did not show graft survival. Although all patients eventually died from leukemia and associated bacteriological or viral complications, investigators felt that the research did effectively demonstrate the effects on the use of immunosuppresive drugs and that the findings had definitive application in the field of organ transplantation.

Documents: Authors: L. Schwarzenberg; G. Mathe; J. De Grouchy; C. De Nava; M. J. De Vries; J. L. Amiel; A. Cattan; M. Schneider; J. R. Schlumberger. Title: White blood cell transfusions. Journal: *Israel Journal of Medical Sciences*, vol. 1, issue 5. Document Type: Journal Article. Document Date: September 1963

From: Georges Mathe, Director, Center for Cancerological and Radiopathological Research; Claude-Bernard Association To: European Office, Aerospace Research, US Air Force. Subject: Possibilities of control of the secondary syndrome complicating bone marrow transplantation for the treatment of whole-body irradiation. Document Type: Memorandum; Proposal. Document Date: 30 October 1963

Authors: G. Mathe. Title: Control of secondary syndrome following whole body irradiation treatment with bone marrow transplants (Progress report for period 01 - 31 July 1964). Document Type: Report. Document Date: August 1964

Authors: G. Mathe. Title: Control of secondary syndrome following whole body irradiation treatment with bone marrow transplants (Progress report for period 1 August 1964 - 31 December 1964). Document Type: Report. Document Date: 1964

Authors: G. Mathe. Title: Control of secondary syndrome following whole body irradiation treatment with bone marrow transplants (Annual summary report for period 1 July 1964 - 30 June 1965). Document Type: Report. Document Date: 31 July 1965

AIR FORCE 1944 – 1974 (CONTINUED)

Hospital Saint-Louis, Paris, France (continued)

Authors: G. Mathe. Title: Control of secondary syndrome following whole body irradiation treatment with bone marrow transplants. Document Type: Report. Document Date: 31 July 1965

Authors: G. Mathe; L. Schwarzenberg; M. J. De Vries; J. L. Amiel; A. Cattan; M. Schneider; J. L. Binet; M. Tubiana; C. Lalanne; V. Schwarzmann; R. Nordmann. Title: Les divers aspects du syndrome secondaire compliquant les transfusions allogeniques de moelle osseuse ou de leucocytes chez des sujets atteints d'hemopathies malignes: Journal: *European Journal of Cancer*, vol. 1. Document Type: Journal Article. Document Date: 1965

From: George S. Melville, Jr., Major, US Air Force, Chief, Modification Effects Unit To: SMBRX (Anderson); SMBR (Lieutenant Colonel Ballinger); SMB; SMSPP. Subject: Monitoring trip, contract AF61(052)816 (12 August 1964 trip report attached). Document Type: Report; Memorandum. Document Date: 26 July 1966

Authors: G. Mathe. Title: Control of secondary syndrome following whole body irradiation treatment with bone marrow transplants (Progress report for period 1 July 1965 - 30 June 1966). Document Type: Report. Document Date: 31 July 1966

Title: Summary of the work accomplished during the period of the report. Document Type: Report; Excerpt. Document Date: 1966 est

Authors: G. Mathe. Title: Control of secondary syndrome following whole body irradiation treatment with bone marrow transplants (Progress report for period 01 July 1966 - 31 December 1966). Document Type: Report. Document Date: 31 January 1967

Authors: G. Mathe. Title: Control of secondary syndrome following whole body irradiation treatment with immuno depressive substances (Progress report number 5). Document Type: Report. Document Date: 31 July 1967

Title: Progress report on study of secondary syndrome in human leukemia patients following total body irradiation (report period March 1965 - November 1967). Document Type: Report; Form. Document Date: 1967

Authors: G. Mathe. Title: Control of secondary syndrome following whole body irradiation treatment with immuno depressive substances (Final report, July 1968). Document Type: Report. Document Date: 31 July 1968

Title: Final report for completion of study on secondary syndrome and bone marrow transplantation in whole-body irradiation. Document Type: Report. Document Date: 07 October 1968

From: Donald R. Anderson, Contract Monitor To: SMSG, Attn: Ms. Reynolds. Subject: Completion of contract AF61(052)-816 to investigate in mice and human leukemia patients the secondary syndrome and its mechanisms in order to develop preventative methodologies. Document Type: Memorandum. Document Date: 30 October 1968

Title: Research and technology work unit summary: Final summary report for,"Control of secondary syndrome following whole body irradiation treatment with bone marrow". Document Type: Report. Document Date: 20 November 1968

Hospital Saint-Pierre, Brussels, Belgium

Start Date	Number	Title
1963	**AF0109**	**The influence of acute exposure to cold on the thyroid function**

Abstract: From 1963 to 1966, the Arctic Aero-Medical Laboratory in conjunction with the Air Force European Office of Aerospace Research sponsored the Department of Medicine and the Laboratory of Experimental Medicine at the University Libre de Bruxelles in Brussels, Belgium in a study of the influence of cold on thyroid uptake of radioactive iodine. Twelve male research participants from the faculty and staff at Hospital Saint-Pierre in Brussels took part in the study.

AIR FORCE 1944 – 1974 (CONTINUED)

Hospital Saint-Pierre, Brussels, Belgium (continued)

Fifty microcuries of iodine-125 or iodine-131 were administered. Organic iodine metabolism was evaluated and the effect of thyroid stimulating hormone on iodine metabolism was studied. Data were interpreted based on a new model of thyroid iodine metabolism. The most sensitive index for the detection of minimal thyroid stimulation was chosen.

Documents: Authors: A. M. Ermans; M. Camus. Title: Final report for Contract AF 61 (052-714): Research concerning the influence of acute exposure to cold on the thyroid function. Document Type: Report; Excerpt. Document Date: 15 February 1966

Keesler AFB Medical Center, MS

Start Date	Number	Title
1974	**81MG008**	**Cisternography using ytterbium (Yb-169) DTPA (pentetate trisodium calcium Yb-169)**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**AF0008**	**Cisternography using ytterbium (Yb-169) DTPA**

Abstract: From 1974 to 1976, researchers from the Keesler Medical Center at Keesler Air Force Base, MS evaluated ytterbium-169 pentetic acid (Yb-169 DTPA) for imaging cerebrospinal fluid-filled spaces. Six patients participated. Yb-169 DTPA was administered by intraspinal lumbar injection in the smallest reasonable dose possible (0.5 to 2.0 millicuries) consistent with the greatest value in terms of relevant diagnostic information for the patients. The isotope is absorbed into the blood from cerebrospinal fluid and excreted in urine.

Documents: From: Stephen J. Rudolph, Jr., Col., USAF, MC, Chairman, Clinical Radioisotope Committee. To: ATC/SG, HQ USAF/SGPR, HQ AFLC/SGPR. Subject: Investigative Proposal and Amendment of AEC By-Product Material License. Document Type: Memorandum. Date: 1 February 1974

Title: Appendix A—Plan of Investigation: Describing a Clinical Evaluation of Ytterbium (Yb-169) DTPA for Cisternography. Document Type: Protocol. Date: February 1974

From: Clifford R. Pollock, Col., USAF, MC, Deputy Director of Professional Services, Office of the Surgeon General. To: USAF Medical Center Keesler/SG. Subject: Clinical Investigation Proposal #542: Cisternography Using Ytterbium (Yb-169) DTPA (Pentetate Trisodium Calcium Yb-169). Document Type: Memorandum. Date: 8 April 1974

From: Thomas E. Schwark, Lt. Col., USAF, MC, Director, Professional and Technical Education. To: HQ USAF/SGPR. Subject: Progress Report—Clinical Investigation Proposal No. 542: Cisternography Using Ytterbium (Yb-169) DTPA (Pentetate Trisodium Calcium Yb-169). Document Type: Memorandum. Date: 7 August 1974

From: D. Glenn Pennington, Lt. Col., USAF, MC, Chief, Clinical Research Laboratory. To: Dr. McIndoe, Dept. of Nuclear Medicine. Subject: Six Month Progress Reports on Clinical Investigations. Document Type: Memorandum. Date: 9 June 1975

AIR FORCE 1944 – 1974 (CONTINUED)

Keesler AFB Medical Center, MS (continued)

From: Thomas E. Schwark, Lt. Col., USAF, MC, Director, Professional and Technical Education. To: HQ USAF/SGPR. Subject: Final Report—Clinical Investigation No. 542: Cisternography Using Ytterbium (Yb-169) DTPA (Pentetate Trisodium Calcium Yb-169). Document Type: Memorandum. Date: 23 January 1976

Author: Theodore F. Bolles, Ph.D., Manager, Nuclear Medical Laboratory, New Health Care Enterprises Dept., 3-M Company. Title: Letter to the Editors: Suitability of Yb-169 DTPA for Cisternography. Journal: *Seminars in Nuclear Medicine*, vol. VII, no. 2. Document Type: Journal Article. Date: April 1977

Title: Cisternography Using Ytterbium-169 (Yb-169) DTPA, SGO #542. Document Type: Event Profile. Date: 1994

Kelly AFB, TX

Start Date	Number	Title
1967	**AF0012**	**Pulmonary blood flow and ventilation distribution during weightlessness**

Abstract: From 1967 to 1969, researchers from the School of Aerospace Medicine at Brooks Air Force Base and Kelly Air Force Base in San Antonio, TX studied blood flow and air movement in the lungs during weightlessness. This study contributed to the knowledge of physiological changes occurring during space flight. Ten active duty military personnel with F-100F aircraft experience participated. Xenon-133 was used to detect changes in blood flow and ventilation. The calculated radiation dose to the lungs was 6.47 millirems while the whole body dose was 0.256 millirem.

Documents:

Author: D. H. Glaister. Title: Regional Ventilation and Perfusion in the Lung During Positive Acceleration Measured with Xe-133. Journal: *Proceedings of the Physiological Society*. Document Type: Journal Article. Date: 18 - 19 December 1964

From: James D. Rogge, Capt., USAF, MC, Acceleration Section, Biodynamics Branch. To: SMBDA/Maj. Brown, SMBD/Dr. Leverett, SMBS/Col. Davis. Subject: Submission of Experimental Protocol. Document Type: Memorandum. Date: 8 September 1967

From: James D. Rogge, Capt., USAF, MC, Acceleration Section, Biodynamics Branch. To: SMBS/Col. Davis. Subject: Protocol of Experiments Involving Human Volunteers: Pulmonary Blood Flow and Ventilation Distribution During Weightlessness. Document Type: Protocol. Date: 8 September 1967

From: James D. Rogge, Capt., USAF, MC. To: SMBS/Col. Davis. Subject: Addendum to Proposal. Document Type: Memorandum. Date: 1967

Authors: Capt. Anthony R. Dowell; Capt. Spencer Shropshire, Jr.; Michael McCally, M.D. Title: Ventilation and Pulmonary Gas Exchange During Headward (+Gz) Gradient Acceleration. Journal: *Aerospace Medicine*, vol. 39, issue 9. Document Type: Journal Article. Date: September 1968

Authors: Anthony R. Dowell et al. Title: Effect of Lower Body Negative Pressure upon Pulmonary Ventilation and Perfusion as Measured Using Xenon-133. Journal: *Aerospace Medicine*, vol. 40, issue 6. Document Type: Journal Article. Date: June 1969

Author: David H. Glaister. Title: Distribution of Pulmonary Blood Flow and Ventilation During Forward (+Gz) Acceleration. Journal: *Journal of Applied Physiology*, vol. 29, no. 4. Document Type: Journal Article. Date: October 1970

Authors: Edward D. Michaelson; Marvin A. Sackner; Robert L. Johnson, Jr. Title: Vertical Distributions of Pulmonary Diffusing Capacity and Capillary Blood Flow in Man. Journal: *The Journal of Clinical Investigation*, vol. 52, issue 2. Document Type: Journal Article. Date: February 1973

AIR FORCE 1944 – 1974 (CONTINUED)

Lackland AFB, TX

Start Date	Number	Title
1965	**AF0079**	**Clinical study of gastroesophageal reflux**

(For abstract and documentation see Frenchay Hospital, Bristol, England.)

Ladd AFB, AK

Start Date	Number	Title
1955	**AF0011**	**Thyroid activity in men exposed to cold using I-131**

(For further information see Chapter 4—"Iodine-131 Study Conducted by the Arctic Aeromedical Laboratory.")

(For abstract and documentation see Arctic Village, AK.)

Start Date	Number	Title
Unknown	**AF0115**	**The metabolic and body temperature response of men exposed to an acute cold stress before and following an arctic bivouac**

Abstract: From a presently undetermined date until 1958, researchers from the Arctic Aeromedical Laboratory at Ladd Air Force Base studied the metabolism and body temperatures of subjects during a standardized cold test before and after a twenty-four day arctic winter bivouac to determine if any changes that took place could be attributed to living in a cold environment. Six volunteers from among Ladd AFB personnel participated. Researchers studied body heat debt, total body heat loss, tissue and environmental insulation, and the vascular reactivity of certain skin areas. Basal metabolism and thyroid function using iodine-131 (I-131) uptake were also determined in each subject before and after the bivouac exposure. Thyroidal uptake was measured six, twelve, twenty-four, and forty-eight hours after ingestion of a capsule of fifteen microcuries of carrier-free I-131. Following the field exercise, a capsule of ten microcuries of I-131 was administered. Urinary elimination of I-131 was determined at the same intervals as uptake, by comparing the activity of a prepared urine sample with a standard solution of I-131 in a well-type scintillation counter. In addition, protein-bound I-131 was determined using a venous blood sample drawn twenty-four hours after I-131 ingestion. No significant change in basal metabolism or I-131 uptake was noted in any subject following the field exposure. Overall, no evidence was found for any generalized acclimatization involving altered metabolism.

Documents: Authors: Donald W. Rennie; Thomas Adams, First Lieutenant, USAF, Department of Physiology, Arctic Aeromedical Laboratory. Title: Arctic Aeromedical Laboratory: The Metabolic and Body Temperature Response of Men Exposed to an Acute Cold Stress Before and Following an Arctic Bivouac, Technical Report 57-37. Document Type: Report. Date: July 1958

AIR FORCE 1944 – 1974 (CONTINUED)

Lockbourne AFB, OH

Start Date	Number	Title
1956	**AF0094**	**Sizing system for high altitude gloves**

(For abstract and documentation see Antioch College, Yellow Springs, OH.)

Malcolm Grow Medical Center, Andrews AFB, MD

Start Date	Number	Title
1973	**AF0090**	**NEN gallium-67 citrate for intravenous administration**

Abstract: In 1973, researchers from the Malcolm Grow Medical Center at Andrews Air Force Base, MD, proposed to evaluate New England Nuclear gallium-67 (Ga-67) citrate for clinical use. Researchers planned to use Ga-67 citrate for tumor localization, and in localizing abscesses and other areas of inflammation and infection. The proposal called for 100 patients with suspected bronchial, thyroid, gastric, or other carcinomas; metastases of unknown primary tumors; Hodgkin's disease; infections; or inflammations. Ga-67 citrate isotonic solution was to be administered intravenously, 2.0 to 5.0 millicuries per subject. The solution was to contain 2.0 millicuries per milliliter of activity, 2.0 milligrams per milliliter sodium citrate, and isotonic saline. Whole body dosimetry was estimated to be 0.69 rad per 3.0 millicurie dose. Results of this study are not available at this time.

Documents: From: Col. Clifford R. Pollock. To: Lt. Col. Carter. Subject: Request for Use of an Investigational New Drug. Document Type: Memorandum. Date: 1 October 1973

Massachusetts General Hospital, Boston, MA

Start Date	Number	Title
1965	**AF0079**	**Clinical study of gastroesophageal reflux**

(For abstract and documentation see Frenchay Hospital, Bristol, England.)

Pikes Peak, Colorado Springs, CO

Start Date	Number	Title
1973	**AF0098**	**Effects of staging on the acute adaptation to high terrestrial elevations**

(For abstract and documentation see Fort Sam Houston, TX.)

AIR FORCE 1944 – 1974 (CONTINUED)

Randolph Air Force Base, TX

Start Date	Number	Title
1953	**AF0113**	**Study of orthodontic procedures in relation to aircrew effectiveness and oral health**

Abstract: From 1953 until 1954, researchers from Randolph AFB, Randolph Field, TX studied orthodontic procedures in relation to aircrew effectiveness and the oral health of Air Force personnel. Investigators thought that the impairment of aircrew effectiveness, caused by poor fitting dental appliances, could be minimized through treatment by an orthodontist. Early orthodontic intervention was believed to curb the need for restorative appliances which often were an irritating distraction to flying servicemembers. An extensive survey of Randolph AFB military personnel resulted in the identification of seventy-two cases of dental problems which were possibly amenable to orthodontic treatment. Of these cases, twenty were crew members. Poor oral hygiene was a disqualifying factor for participation in this study. Cases were to be followed for approximately one year. Each case began with a full mouth x-ray, cephalometric head x-ray, cephalometric photographs, intraoral photographs, and casts. Of the seventy-two identified cases, approximately five cases of adjunct treatment by orthodontic measures were instituted in conjunction with operative and prosthodontic treatment and another two cases were treated by orthodontia eliminating the necessity of prosthodontic replacements. In conjunction with Dental Sciences Division, USAF School of Aviation Medicine, cephalometric measurements were made on several cases involving painful disturbances of the temporomandibular joint and excessively closed mandibular relationship. Each case was x-rayed and photographed pre and postoperatively, but was not subsequently followed. This study was ultimately terminated due to separation from the service of the principal investigator.

Documents: From: Paul W. Greiwe, Captain, US Air Force Dental Corps To: Commandant, Air Force School of Aviation Medicine. Subject: Report of clinical research project "A study of orthodontic procedures in relation to aircrew effectiveness and oral health of Air Force personnel". Document Type: Report; Memorandum. Document Date: 05 November 1953

From: Melvin G. West, Captain, US Air Force, Adjutant; John R. McGraw, Colonel, US Air Force, Deputy Commandant To: Commandant, School of Aviation Medicine, Randolph Air Force Base. Subject: Termination of project "Study of orthodontic procedures in relation to aircrew effectiveness and oral health". Document Type: Memorandum. Document Date: 19 August 1954

Subject: "Study of orthodontic procedures in relation to aircrew effectiveness and oral health", research and development project card [project termination]. Document Type: Report. Document Date: 15 September 1954

Start Date	Number	Title
Unknown	**AF0114**	**[Lovelace] Laminography in otolaryngology**

Abstract: From 1954 until 1957, researchers from Randolph AFB, Randolph Field, TX examined laminography as an effective eustachian tube visualization tool for use in the treatment of middle ear ventilation inadequacy. It is unclear whether any human subjects were involved in this study or if there was radiation exposure during participation. As aerotitis media affected many flight personnel and contributed to a significant number of man-flying days lost, investigators realized the importance of developing a refined technique for the qualitative and quantitative assessment of eustachian tube

AIR FORCE 1944 – 1974 (CONTINUED)

Randolph Air Force Base, TX (continued)

function. Researchers aimed to develop general physical and mathematical theory for laminographic technique and to apply the principles in clinical situations. Mathematical analyses of the blurring and magnification effects in various laminar settings were tabulated. Researchers had planned verification of the analyses in models, and subsequent application to techniques in picturing and measuring the eustachian canal, but this part of the study was not completed.

Documents: From: Allen F. Strehler, Headmaster, Department of Mathematics To: Commandant, Air Force School of Aviation Medicine, Randolph Air Force Base. Subject: Contract AF 18(600)-637 entitled "Laminography in otolaryngology" (mathematical models of laminography). Document Type: Letter. Document Date: 14 May 1954

Title: The use of laminography in otolaryngology. Document Type: Proposal. Document Date: 1954

Title: "Laminography in otolaryngology" - research and development project card (project termination). Document Type: Report. Document Date: 08 January 1957

School of Aerospace Medicine, Brooks AFB, TX

Start Date	Number	Title
1961	**AF0029**	**Reliable extrapolation of indicator-dilution curves without replotting**

Abstract: From 1961 to 1963 researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX established a standard method for calculating cardiac output using indicator-dilution curves. The dilution of a radioactive tracer served as the indicator of cardiac output. Mathematical analysis of tracer dilutions created a series of indicator-dilution curves, which were used as standards for estimations in future analyses. Nineteen active duty military personnel participated. Each participant was intravenously administered 10 to 20 microcuries of radioisotope dilution containing iodine-131 labeled human albumin. The calculated total-body exposure was 10 to 20 millirems per administration.

Documents: Authors: R. J. Gorten; H. M. Hughes. Title: Reliable Extrapolation of Indicator-Dilution Curves without Replotting. Journal: *American Heart Journal*, vol. 67, issue 3. Document Type: Journal Article. Date: March 1964

Start Date	Number	Title
1964	**AF0059**	**Cardiovascular deconditioning from space cabin confinement**

Abstract: In 1964, researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX, assessed the influence of weightlessness on circulatory system changes in blood volume after cardiovascular deconditioning using established radioactive tracer dilution techniques. Cardiovascular deconditioning is a change in circulatory function after prolonged periods of weightlessness that results in water loss and decreased blood volume. This study contributed to the knowledge of physiological changes occurring during manned space flight. Deconditioning was produced by two weeks of space cabin simulator confinement for twenty-six subjects and thirty day confinement for ten subjects. Of the thirty-six active duty military personnel who participated, only 17 received radioactive tracer injections. Iodine-131 labeled

AIR FORCE 1944 – 1974 (CONTINUED)

School of Aerospace Medicine, Brooks AFB, TX (continued)

human albumin in two injections containing 5 microcuries of activity was used for the tracer. The total-body exposure per injection was 5 millirem. Researchers noted cardiovascular deconditioning similar to changes noted during bed rest and other immobilization studies.

Documents: Authors: Lawrence E. Lamb, M.D. et al. Title: Cardiovascular Deconditioning from Space Cabin Simulator Confinement. Journal: *Aerospace Medicine*, vol. 35, issue 5, pp. 420–428. Document Type: Journal Article. Date: May 1964

Start Date	Number	Title
1964	**AF0060**	**Cardiovascular deconditioning during chair rest**

Abstract: In 1964, researchers at the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX, assessed changes in circulatory dynamics, including cardiovascular deconditioning, following a period of inactivity. Cardiovascular deconditioning is a change in circulatory function after prolonged periods of weightlessness that results in water loss and decreased blood volume. Subjects were studied in a simple experiment using strict chair rest with immobilization as a means of achieving inactivity. Six active duty military personnel participated. Blood volume was assessed using iodine-131 labeled human albumin in two administrations of 5 microcuries as a tracer. The expected total-body exposure per administration was 5 millirem. This study contributed to the knowledge of physiological changes occurring during manned space flight. Physical inactivity was shown to cause adverse changes in circulatory dynamics leading to syncopal reactions or circulatory collapse.

Documents: Authors: Lawrence E. Lamb, M.D.; Robert L. Johnson; Paul M. Stevens. Title: Cardiovascular Deconditioning During Chair Rest. Journal: *Aerospace Medicine*, vol. 35, issue 7, pp. 646-649. Document Type: Journal Article. Date: July 1964

Start Date	Number	Title
1964	**AF0061**	**Effects of four weeks of absolute bed rest on circulatory function in man**

Abstract: In 1964, researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX studied various effects of four weeks of absolute bed rest on the circulatory system. Six active duty military personnel participated. Blood volume studies and tilt table tests were performed. Iodine-131 labeled human albumin in two injections containing 5 microcuries of activity was used as a tracer. The expected total-body exposure per injection was 5 millirem. The studies suggested that postural tolerance after landing from a thirty-day flight in the Manned Orbiting Laboratory may vary widely among different individuals. Researchers also suggested that an antigravity garment would aid in alleviating some of the effects of prolonged space flight.

Documents: Authors: P. B. Miller; R. L. John; L. E. Lamb. Title: Effects of Four Weeks of Absolute Bed Rest on Circulatory Function in Man. Journal: *Aerospace Medicine*, vol. 35, issue 12. Document Type: Journal Article. Date: December 1964

Start Date	Number	Title
1965	**AF0062**	**Hypokinesia secondary to chair rest from 4 to 10 days**

Abstract: In 1965, researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX, assessed changes in blood volume and red cell mass after cardiovascular

AIR FORCE 1944 – 1974 (CONTINUED)

School of Aerospace Medicine, Brooks AFB, TX (continued)

deconditioning using established radioactive tracer dilution techniques. Cardiovascular deconditioning is a change in circulatory function after prolonged periods of weightlessness that results in water loss and decreased blood volume. This study contributed to the knowledge of physiological changes occurring during space flight. Twenty-three active duty military personnel participated. Deconditioning was produced by chair rest for periods of four, six, eight, and ten days. Iodine-131 labeled albumin in two administrations containing 5 microcuries of activity was used for the tracer. The total-body dose per administration was 5 millirem. Overall, researchers inferred that deconditioning during manned space flight may be influenced by confinement with restricted body movement, independent of the effects of weightlessness.

Documents: Title: Hypokinesia Secondary to Chair Rest From 4–10 Days. Document Type: Report; Form. Date: August 1965

Authors: L. E. Lamb; P. M. Stevens; R. L. Johnson. Title: Hypokinesia Secondary to Chair Rest from 4 to 10 Days. Journal: *Aerospace Medicine*, vol. 36, issue 8, pp. 755–763. Document Type: Journal Article. Date: August 1965

Start Date	Number	Title
1965	**AF0063**	**Influence of lower body negative pressure on the level of hydration during bed rest**

Abstract: In 1965, researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX, studied how short-term lower body negative pressure (LBNP) altered circulatory dynamics to prevent changes during prolonged bed rest. The study examined fluid balance, body weight, hematocrit, and plasma volume and lasted twenty-three days. This study contributed to the knowledge of physiological changes occurring during manned space flight. Four healthy active duty military personnel participated. Decreasing atmospheric pressure on the lower body for eight hours per day prevented the shift in blood from the lower body to the thorax that accompanies deconditioning. Iodine-131 labeled albumin in six administrations of 5 microcuries was used for the tracer in studying plasma volume. The total-body exposure per administration was 5 millirem. Results indicated that LBNP, on a short-term basis, could restore the level of hydration and favorably influence circulatory dynamics during bed rest.

Documents: Authors: L. E. Lamb; P. M. Stevens. Title: Influence of Lower Body Negative Pressure on the Level of Hydration During Bed Rest. Journal: *Aerospace Medicine*, vol. 36, issue 12, pp. 1145–1151. Document Type: Journal Article. Date: December 1965

Start Date	Number	Title
1965	**AF0064**	**Effects of 9-alphafluorohydrocortisone on dehydration due to prolonged bed rest**

Abstract: In 1965, researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX, examined the effects of 9-alphafluorohydrocortisone (9-FF) on the metabolic effects of six days of bed rest. Investigators evaluated a drug to mitigate water loss and subsequent diminution in blood volume resulting from prolonged bed rest. Four healthy active duty military personnel participated. Iodine-131 labeled albumin in three administrations containing 5 microcuries of activity was used as a tracer in the blood volume studies. The total-body dose per

AIR FORCE 1944 – 1974 (CONTINUED)

School of Aerospace Medicine, Brooks AFB, TX (continued)

administration was 5 millirem. Results indicated that, in the course of continuous bed rest for six days, a significant loss of weight and plasma volume occurs along with increased urinary volume and sodium excretion. The administration of 9-FF during the last two days of bed rest increased subjects' body weight and decreased their urinary volume and sodium excretion.

Documents: Authors: P. M. Stevens; T. N. Lynch. Title: Effects of 9-Alphafluorohydrocortisone on Dehydration Due to Prolonged Bed Rest. Journal: *Aerospace Medicine*, vol. 36, issue 12, pp. 1151–1156. Document Type: Journal Article. Date: December 1965

Start Date	Number	Title
1965	**AF0065**	**Effects of moderate physical exercise during four weeks of bed rest on circulatory functions in man**

Abstract: In 1965, researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX, investigated the effects of mild physical exercise and bed rest on blood volume and red cell mass. This study contributed to the knowledge of physiological changes occurring during space flight. Six active duty military personnel participated. During four weeks of bed rest participants engaged in light to moderate exercise. Using established radioactive tracer dilution techniques, iodine-131 labeled albumin in six administrations of 5 microcuries of activity was used as a tracer in the blood volume studies. The total-body dose per administration was 5 millirem. Researchers observed that changes in plasma volume during and after bed rest parallelled changes characteristic of simple bed rest.

Documents: Authors: Lt. Col. Perry B. Miller; Lt. Col. Robert L. Johnson; Lawrence E. Lamb, M.D. Title: Effects of Moderate Physical Exercise During Four Weeks of Bed Rest on Circulatory Functions in Man. Journal: *Aerospace Medicine*, vol. 36, issue 11, pp. 1077–1082. Document Type: Journal Article. Date: November 1965

Start Date	Number	Title
1965	**AF0066**	**Influence of long-term lower body negative pressure on the circulatory function of man during prolonged bed rest**

Abstract: In 1965, researchers at the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX, assessed changes in blood volume and red cell mass during cardiovascular deconditioning using established radioactive tracer dilution techniques. Cardiovascular deconditioning is a change in circulatory function after prolonged periods of weightlessness that results in water loss and decreased blood volume. This study contributed to the knowledge of physiological changes occurring during space flight. Twelve active duty military personnel participated. Deconditioning was produced by prolonged bed rest. Decreased atmospheric pressure on the lower body for eight hours per day prevented the shift in blood from the lower body to the thorax that accompanies deconditioning. Iodine-131 labeled albumin containing five microcuries of activity was used for the tracer. The total-body dose per administration was 5 millirem. Lower body negative pressure during four weeks of absolute bed rest was shown to maintain plasma volume.

Documents: Authors: P. M. Stevens; P. B. Miller; C. A. Gilbert; T. N. Lynch; R. L. Johnson; L. E. Lamb. Title: Influence of Long-Term Lower Body Negative Pressure on the Circulatory Function in Man During Prolonged Bed Rest. Journal: *Aerospace Medicine*, vol. 37, issue 4. Document Type: Journal Article. Date: April 1966

AIR FORCE 1944 – 1974 (CONTINUED)

School of Aerospace Medicine, Brooks AFB, TX (continued)

Start Date	Number	Title
1965	**AF0079**	**Clinical study of gastroesophageal reflux**

(For abstract and documentation, see Frenchay Hospital, Bristol, England.)

Start Date	Number	Title
1965	**AF0096**	**Human volunteers in support of work units 7755-05-001 (normative laboratory data and aerospace crews) and 7755-05-003 (analytical techniques—research and development)**

Abstract: In 1965, researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX, proposed to correlate total body water determinations obtained by deuterium oxide dilutions to results obtained using dilutions of radioactive tritium. To date, no information is available on the number of study participants. A predose sample of body fluid (urine, ten milliliters of blood or parotid fluid) was to be taken from each fasting subject. Deuterium oxide (ten to twenty milliliters) and tritium (250 microcuries) was to be administered orally, with additional samples of body fluid obtained at specific intervals following ingestion. Results of the study are not available at this time.

Documents: From: Marion J. Stansell, Capt., BSC, USAF, Chief, Clinical Pathology Section. To: SMKP, SMK, SMG. Subject: Request for Volunteer Human Research Subjects. Document Type: Memorandum. Date: 12 November 1965

Authors: Lt. Col. Irving Davis, USAF, BSC, Recorder; Mans G. Clamann, M.D.; Chairman. Title: Minutes of the USAF SAM Research Committee [includes memorandum requesting volunteer human subjects]. Document Type: Minutes. Date: 15 February 1967

Start Date	Number	Title
1966	**AF0028**	**Determination of body water content using trace levels of deuterium oxide and infrared spectrophotometry**

Abstract: From 1966 to 1967 researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX measured body water content using trace amounts of deuterium oxide in sixty-six male research participants. Deuterium (a nonradioactive isotope of hydrogen) was compared to tritium (a radioactive isotope of hydrogen) to establish a standard method for measuring blood volume.

Documents: Authors: M. J. Stansell; L. Mojica, Jr.; B. L. Plater. Title: Determination of Body Water Content Using Trace Levels of Deuterium Oxide and Infrared Spectrophotometry. Document Type: Report. Date: February 1968

Authors: Marion J. Stansell; Luis Mojica, Jr. Title: Determination of Body Water Content Using Trace Levels of Deuterium Oxide and Infrared Spectrophotometry. Journal: *Clinical Chemistry*, vol. 14, issue 11. Document Type: Journal Article. Date: 29 March 1968

AIR FORCE 1944 – 1974 (CONTINUED)

School of Aerospace Medicine, Brooks AFB, TX (continued)

Start Date	Number	Title
1966	**AF0067**	**Effects of lower body negative pressure on physiologic changes due to four weeks of hypoxic bed rest**

Abstract: In 1966, researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX, assessed changes in blood volume during cardiovascular deconditioning using established radioactive tracer dilution techniques. Cardiovascular deconditioning is a change in circulatory function after prolonged periods of weightlessness that results in water loss and decreased blood volume. Twenty-two active duty military personnel participated. Deconditioning was produced by prolonged bed rest. Decreased atmospheric pressure on the lower body for eight hours per day prevented the shift in blood from the lower body to the thorax that accompanies deconditioning. Iodine-131 labeled albumin in six injections containing 5 microcuries of activity was used for the tracer. The total-body dose per injection was 5 millirem.

Documents: Authors: P. M. Stevens; P. B. Miller; C. A. Gilbert; T. N. Lynch; R. L. Johnson; L. E. Lamb. Title: Effects of Lower Body Negative Pressure on Physiologic Changes Due to Four Weeks of Hypoxic Bed Rest. Journal: *Aerospace Medicine*, vol. 37, issue 5, pp. 466–473. Document Type: Journal Article. Date: May 1966

Start Date	Number	Title
1966	**AF0082**	**Prevention of altitude sickness with acetazolamide**

Abstract: From 1966 to 1967 researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX evaluated low-dose acetazolamide as a preventive medication for the symptoms related to altitude sickness. Forty-four active duty military personnel participated. Subjects were placed in a low-pressure chamber simulating atmospheric pressures at either 14,000 or 3,000 feet for twenty-four hours. Before entry, subjects took 750 mg of acetazolamide or a placebo. During their stay, subjects filled out a questionnaire designed to evaluate their state of well-being. Samples of arterial blood and cerebrospinal fluid were obtained and analyzed for pH, oxygen partial pressure, carbon dioxide partial pressure, carbon dioxide level, bicarbonate, and lactate to assess compensatory changes in respiration due to high-altitude exposure. X-rays of the lower back were also taken. Researchers found that pretreatment with acetazolamide was of sufficient clinical benefit to allow its recommendation prior to altitude exposure.

Documents: From: Richard S. Kronenberg, Capt., MC, USAF. To: SMBP, SME, SMG. Subject: Request for Human Subjects [for experiment entitled: The Prevention of Altitude Sickness with Acetazolamide (Diamox), Project 7758, Task 77580103]. Document Type: Memorandum. Date: 21 February 1966

From: Richard S. Kronenberg, Capt., MC, USAF. To: SMBP, SMB, SMG. Subject: Request for Human Subjects—Modification of Original Experimental Protocol. Document Type: Memorandum. Date: 21 March 1966

Authors: Capt. Richard S. Kronenberg, USAF, MC; Stephen M. Cain, Ph.D. Title: Hastening Respiratory Acclimatization to Altitude with Benzolamide. Document Type: Report. Date: October 1967

Authors: Richard S. Kronenberg, Capt., USAF, MC; Stephen M. Cain, Ph.D. Title: The Effects of Acetazolamide on Physiologic and Subjective Responses of Men to 24 Hours at 14,000 Feet. Document Type: Report. Date: 1967 est.

AIR FORCE 1944 – 1974 (CONTINUED)

School of Aerospace Medicine, Brooks AFB, TX (continued)

Authors: Richard S. Kronenberg; Stephen M. Cain. Title: Effects of Acetazolamide and Hypoxia on Cerebrospinal Fluid Bicarbonate. Journal: *Journal of Applied Physiology*, vol. 23, issue 1. Document Type: Journal Article. Date: January 1968

Authors: Capt. Richard S. Kronenberg, USAF, MC; Stephen M. Cain, Ph.D. Title: Hastening Respiratory Acclimatization to Altitude with Benzolamide (CL 11,366). Journal: *Aerospace Medicine*, vol. 39, issue 3. Document Type: Journal Article. Date: March 1968

Start Date	Number	Title
1966	**AF0103**	**Hypokinetic studies**

Abstract: In 1966, researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX, proposed to study the dose response effects of erythropoietin, a hormone that acts on bone marrow cells to stimulate red blood cell production. To date, no information is available on the number of study participants. Plasma erythropoietin was to be measured following a twenty-four-hour stay in an altitude chamber simulating an altitude of 14,000 feet. Several days later, the participants were to be returned to the chamber for a thirty-day period. Five to seven days after their return to sea level, the subjcts were to receive small intravenous infusions of their plasma, which was obtained after their initial twenty-four-hour altitude exposure. A dose response curve relating the units of erythropoietin injected versus the absolute reticulocyte response was then to be constructed. Red cell mass was to be measured by a standard chromium-51 technique. Radiation doses and results of this study are not available at this time.

Documents: Authors: [Illegible]. Title: Hypokinetic Studies. Document Type: Proposal. Date: 17 May 1966

Start Date	Number	Title
1966	**AF0105**	**Drug study for flight personnel to determine performance changes induced by antimalarials**

Abstract: In 1966, researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX, proposed to determine performance changes induced by antimalarial drug treatment during normal and simulated flight conditions. Twenty active duty military personnel were wanted from Lackland AFB for the study. The radioisotope to be used was chromium-51. Radiation doses and research results are unavailable at this time.

Documents: From: Maj. Malcolm Lancaster. To: SMK, SMBS. Subject: Drug Study for Flying Personnel [includes Protocol for Psychomotor Testing (DDS Study)]. Document Type: Memorandum. Date: 15 December 1966

From: Malcolm Lancaster, Maj., USAF, MC, Chief, Internal Medicine Branch. To: USAF SAM (SMG). Subject: Drug Study for Flying Personnel [Study to Evaluate the Effects of Combined Anti-Malarial Prophylaxis Under Simulated Flight Conditions]. Document Type: Memorandum. Date: 15 December 1966

Start Date	Number	Title
1967	**AF0012**	**Pulmonary blood flow and ventilation distribution during weightlessness**

(For abstract and documentation, see Kelly AFB, TX.)

AIR FORCE 1944 – 1974 (CONTINUED)

School of Aerospace Medicine, Brooks AFB, TX (continued)

Start Date	Number	Title
1967	**AF0014**	**Effects of acceleration on glomerular filtration rate and effective renal plasma flow**

Abstract: In 1967, researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX, proposed to study the effects of increased gravity on blood flow through the kidney and on the rate of urine formation (glomerular filtration rate). This study was designed to contribute to the knowledge of physiological changes occurring during space flight. The protocol called for ten active duty military personnel with proven ability to tolerate long-term acceleration. Radiation exposure was from single administrations of 50 microcuries iodine-131 orthoiodonippurate and iodine-125 diatrizoate injections. Results of this study are unavailable at this time.

Documents: From: Maj. William K. Brown. To: Dr. Clamann. Subject: Protocol of Experiment Involving Human Volunteers, Entitled: Effects of Acceleration on Glomerular Filtration Rate and Effective Renal Plasma Flow. Document Type: Memorandum. Date: 31 May 1967

Start Date	Number	Title
1967	**AF0015**	**The effect of total-body exercise on the metabolic and cardiovascular consequences of prolonged weightlessness**

Abstract: From 1967 to 1968, researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX evaluated whole-body exercise on moderating the effects of prolonged weightlessness. A total-body exerciser had been developed that would mimic normal gravitational stresses on the musculoskeletal system when used in simulated zero gravity. This study determined whether this method prevented metabolic and cardiovascular changes occurring during weightlessness, and how much exercise or energy expended was required. Thirty-two active duty military personnel between the ages of 18 and 25 participated. Total radiation exposure from chromium-51, iodine-125, iron-59, and deuterium was 15.4 millirem (whole body) over a 16-week period. Results of the study are not available at this time.

Documents: Authors: Capt. John H. Triebwasser; Maj. Malcolm C. Lancaster; Maj. H. L. Brammell. Title: Protocol of Experiment Involving Human Volunteers: The Effect of Total-Body Exercise on the Metabolic and Cardiovascular Consequences of Prolonged Weightlessness. Document Type: Protocol. Date: 1968 est.

Authors: Malcolm C. Lancaster; John H. Triebwasser. Title: The Effect of Total-Body Exercise on the Metabolic, Hematologic, and Cardiovascular Consequences of Prolonged Bed Rest. Document Type: Transcript. Date: 1971

Author: Malcolm C. Lancaster, USAF School of Aerospace Medicine, Brooks Air Force Base. Title: Hematologic Aspects of Bed Rest. Document Type: Transcript. Date: 1971

AIR FORCE 1944 – 1974 (CONTINUED)

School of Aerospace Medicine, Brooks AFB, TX (continued)

Start Date	Number	Title
1967	**AF0046**	**Simultaneous determination of Fe-59, Cr-51, and I-125, using a gamma spectrometer**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1967	**AF0047**	**Determination of five blood parameters using Fe-59**

Abstract: From 1967 to 1968, researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX investigated the modification of existing techniques for the measurement of blood parameters in ferrokinetics (the movement of iron in the body). Simplified methods for determining iron clearance from plasma, iron uptake by reticulocytes, direct measurement of plasma volume, and indirect measurements of blood volume and red cell mass were developed. To date, no information is available on the number of study participants. A ferric chloride solution containing iron-59 was used in the study. The solution had a specific activity of ten microcuries per milligram and contained thirty microcuries per milliliter. Each test required the use of twelve microcuries of activity, with approximately six microcuries used as a standard. The single total body dose using six microcuries was 131 millirem. Values were compared with those of other techniques. Researchers found the modified techniques to provide reliable estimates of ferrokinetics and iron metabolism.

Documents: Authors: Donald F. Logsdon; James F. Green. Title: Determination of Five Blood Parameters Using Fe-59. Document Type: Report. Date: June 1968

Start Date	Number	Title
1967	**AF0048**	**Red cell mass, red cell survival, and total blood volume with chromium-51**

Abstract: From 1967 to 1968 researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX developed a standard method for determining red cell survival curves, red cell mass, total blood volume, and plasma volume. A method for separating superimposed chromium-51 tagged red cell survival curves was also described. One individual participated. Single total-body dose was 5.3 millirem.

Documents: Authors: John W. Harper; James F. Green; Donald F. Logsdon. Title: Simultaneous Determination of Fe-59, Cr-51, and I-125, Using a Gamma Spectrometer. Document Type: Report. Date: May 1968

Authors: D. F. Logsdon; J. F. Green. Title: Red Cell Mass, Red Cell Survival, and Total Blood Volume with Chromium-51. Document Type: Report. Date: July 1968

AIR FORCE 1944 – 1974 (CONTINUED)

School of Aerospace Medicine, Brooks AFB, TX (continued)

Start Date	Number	Title
1967	**AF0080**	**Human radiation sensing study**

Abstract: In 1967, researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX, determined whether x-rays could be visually detected. Thirty-one patients participated in this study. After a period of dark adaptation, a series of sham or true skull/sinus x-rays were taken while the electrical activity of the retina was recorded. No evidence was found that radiation could be visually detected under standard clinical conditions.

Documents: Authors: Lewis J. Hellerstein, USAF School of Aerospace Medicine; Edwin R. Ballinger, USAF School of Aerospace Medicine. Title: A Study of Human Radiation Sensing and Dark Adaptometry Using X-Rays. Journal: *Radiation Research*, vol. 44 , pp. 629–636. Document Type: Journal Article. Date: 1970

Start Date	Number	Title
1967	**AF0104**	**To quantitate the rate of erythropoiesis during bed rest**

Abstract: From 1967 until a presently undetermined date, researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX measured the production of red blood cells during bed rest. The purpose was to quantify the rate of erythropoiesis during bed rest with the application of ferrokinetics and to test methods and techniques for trace metal balance studies. In addition, iron balance was also measured. Thirteen male active duty military personnel participated. Radioisotopic tracers employed for this study were chromium-51 and iron-59. Radiation doses and results of this study are unavailable at this time.

Documents: Author: Capt. Bernard S. Morse. Title: Erthrokinetic Changes in Man Asscciated with Bed Rest. In: *School of Aerospace Medicine Lectures in Aerospace Medicine*, 1967. Document Type: Chapter. Date: 1967

Start Date	Number	Title
1968	**AF0016**	**The use of chlorothiazide under simulated flying conditions**

Abstract: In 1968, researchers from the School of Aerospace Medicine, Brooks Air Force Base in San Antonio, TX, proposed to measure changes in blood volume produced by chlorothiazide, a hypertension medication. The purpose of the experiment was to administer chlorothiazide to human volunteers and observe their psychomotor performance and physiologic responses under simulated flying conditions. Twenty-four volunteer aviators were needed as subjects to complete the study. This study represented an effort to demonstrate that this drug could be safely given to aviators as a means of controlling hypertension without suspension from flying duties. The parameters to be measured related to changes produced by the drug to the subject's blood volume. The radiation dose from chromium-51 and iodine-125 was expected to be 40 millirads over the course of the study. Results from the study are unavailable at this time.

Documents: Authors: Maj. John H. Triebwasser et al. Title: The Use of Chlorothiazide Under Simulated Flying Conditions. Document Type: Protocol. Date: 1968 est.

AIR FORCE 1944 – 1974 (CONTINUED)

School of Aerospace Medicine, Brooks AFB, TX (continued)

Start Date	Number	Title
1968	**AF0034**	**Determining plasma volume, blood volume, and red cell mass with I-125**

Abstract: From 1968 until a presently undetermined date, researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX determined a normal range for plasma volume using radioiodinated human serum albumin (RIHSA) labeled with iodine-125. To date no information is available on the number of study participants. Total-body dose from one RIHSA administration of 5.0 microcuries was 6.0 millirem. Typical plasma volume calculated with this tracer dilution technique is 37 ml/kg, within the normal range of 27.6 to 52.0. Total blood volume and red cell volume were also indirectly measured using this method.

Documents: Authors: Capt. Donald F. Logsdon, Jr.; Sgt. James F. Green. Title: Determining Plasma Volume, Blood Volume, and Red Cell Mass with I-125. Document Type: Report. Date: May 1968

Start Date	Number	Title
1968	**AF0035**	**Reproducibility of repeated total-body water measurements with tritium**

Abstract: From 1968 to 1969, researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX analyzed the reproducibility of a tritium tracer dilution technique for repeated measurements of total-body water (TBW). Six healthy males participated. Total-body dose equaled 19 millirem from 250 microcuries of hydrogen-3 (H-3). Results indicated the technique was dependent on the percent clearance of the isotope per week and the interval between measurements. A sample-to-background counting ratio of at least 2:1 was necessary to obtain reproducible results.

Documents: Authors: Capt. Donald F. Logsdon, Jr., USAF, BSC; M.Sgt. James F. Green, USAF; S.Sgt. John W. Harper, USAF. Title: Reproducibility of Repeated Total-Body Water Measurements with Tritium, Final Report August 1968–January 1969. Document Type: Report. Date: July 1969

Start Date	Number	Title
1968	**AF0049**	**Measuring iron metabolism in hematopoietic centers using Fe-59 in the presence of 51-Cr and I-125**

Abstract: In 1968, researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX, investigated methods of detecting iron-59 (Fe-59) radioactivity in blood-forming tissues in the presence of iodine-125 (I-125) and chromium-51 (Cr-51). Iron metabolism was normally measured as part of a larger study of red blood cell kinetics and other blood parameters, and this method allowed two or more isotope studies to be conducted simultaneously. The study included eight research participants. Fe-59 concentrations in blood-forming tissues were accurately and reproducibly measured with a rate meter, a photomultiplier probe, and a scintillation crystal detection system. When the three isotopes were present, a lead filter screened out nearly all the Cr-51 and I-125 activity, while allowing 60 percent of the Fe-59 activity to pass.

Documents: Authors: D. F. Logsdon; J. F. Green; G. M. Strong. Title: Measuring Iron Metabolism in Hematopoietic Centers Using Fe-59 in the Presence of Cr-51 and I-25I. Document Type: Report. Date: September 1968

AIR FORCE 1944 – 1974 (CONTINUED)

School of Aerospace Medicine, Brooks AFB, TX (continued)

Start Date	Number	Title
1968	**AF0050**	**Standard method for Fe-59 ferrokinetics**

Abstract: In 1968, researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX, developed simplified methods for measuring ferrokinetics (iron movement within the body) using iron-59 (Fe-59) as a tracer. This study combined several procedures used at the time. One individual participated. The single total-body dose using 6 microcuries of Fe-59 was 131 millirem. Methods for measuring plasma iron clearance, red cell iron uptake, and the movement of iron through hematopoietic tissues were presented. Formulas were given for calculating plasma and red cell iron turnover, hemoglobin synthesis, mean red blood cell life-span (including precursors), and mean effective red cell hemoglobinization time.

Documents: Authors: D. F. Logsdon, Jr.; J. F. Green; G. M. Strong. Title: A Standard Method for Fe-59 Ferrokinetics. Document Type: Report. Date: September 1968

Start Date	Number	Title
1968	**AF0051**	**Simultaneous measurement of blood parameters using radiochromium-labeled red cells and radioiron-labeled plasma**

Abstract: In 1968, researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX, developed a single method to measure erythrokinetics (total red cell volume, rate of red cell production, and red cell life span) and blood volume. Separate procedures for these measurements were previously established. The method developed in this study allowed these parameters to be measured simultaneously, reducing the volume of blood and number of samples needed and decreasing artifactual variations. One individual participated. Radiochromium was used as the tracer. Radiation exposures are unavailable at this time. Values obtained were in agreement with those resulting from separate studies.

Documents: Authors: D. F. Logsdon. Title: Simultaneous Measurement of Blood Parameters Using Radiochromium-Labeled Red Cells and Radioiron-Labeled Plasma. Document Type: Report. Date: October 1968

Start Date	Number	Title
1968	**AF0052**	**Modified Fe-59 ferrokinetic procedure**

Abstract: In 1968, researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX, modified a technique for studying ferrokinetics (iron movement within the body). To reduce the radiation dose from iron-59 (Fe-59), a procedure was developed that reduced the injection activity from 6 microcuries to 0.6 microcuries. One individual participated. The total-body exposure dose was reduced from 110 millirem to 11 millirem. Blood volume, plasma iron clearance, and red cell uptake measurements were within normal limits. Measurements of Fe-59 in the spleen, heart, liver, and sacrum by external counting produced curves similar to those found with higher doses.

Documents: Authors: D. F. Logsdon; J. F. Green; J. W. Harper. Title: A Modified Fe-59 Ferrokinetic Procedure. Document Type: Report. Date: April 1969

AIR FORCE 1944 – 1974 (CONTINUED)

School of Aerospace Medicine, Brooks AFB, TX (continued)

Start Date	Number	Title
1968	**AF0083**	**Changes in right heart filling pressures (central venous) during simulated reentry profiles (transverse acceleration)**

Abstract: In 1968, researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX, proposed to study blood pressure and flow through the heart during simulated space craft reentry profiles. Changes in right heart filling pressure were to be correlated to the incidence of abnormal heart rhythms commonly seen during transverse acceleration. Transverse acceleration was to be simulated in a centrifuge. Researchers proposed to study ten individuals who were experienced in riding the centrifuge. Catheter placement in the superior vena cava was to entail the use of 2 to 3 ml of 60 percent Renografin and a 20- to 30-second fluoroscopic exposure. This study was designed to contribute to the knowledge of physiological changes occurring during manned space flight. Results of this study are not available at this time.

Documents: Authors: Lt. Col. William K. Brown; Capt. George H. Cohen; Sidney D. Leverett, Jr., Ph.D. Title: Changes in Right Heart Filling Pressures (Central Venous) During Simulated Reentry Profiles (Transverse Acceleration). Document Type: Protocol. Date: 1968 est.

Start Date	Number	Title
1968	**AF0106**	**Insensible weight and water loss during simulated space flight**

Abstract: In 1968, researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX, examined water balance and body weight during simulated space flight. The effects of confinement, gas composition, and a hypobaric environment on body weight, water and food consumption, urine and fecal excretion, body volume, and total-body water were investigated. This study contributed to the knowledge of physiological changes occurring during space flight. Twelve active duty military personnel participated. During the study, participants consumed dehydrated bite-sized and powdered formula foods. Insensible weight loss was calculated from body weight, food and water intake, and urine and fecal excretion. Insensible water loss was calculated from weight of body water, water intake, oxidative water, and urine and fecal water excretion. Total body water was measured once before, twice during, and once after exposure to the hypobaric environment. Tritium dioxide (250 microcuries) was administered orally in 25 grams of water. A ten milliliter blood sample was withdrawn prior to swallowing the tritiated water and another sample was obtained three hours later. Insensible weight loss was unaffected by the hypobaric environment and averaged 1.4 kg/man/day. Insensible water loss was greater in the hypobaric environment. No detrimental effects of the hyperbaric environment were observed during the exposure.

Documents: Authors: First Lt. George F. Gee; Capt. Richard S. Kronenberg; Capt. Roy E. Chapin. Title: Insensible Weight and Water Loss During Simulated Space Flight. Journal: *Aerospace Medicine*, vol. 39, issue 9. Document Type: Journal Article. Date: September 1968

AIR FORCE 1944 – 1974 (CONTINUED)

School of Aerospace Medicine, Brooks AFB, TX (continued)

Start Date	Number	Title
1969	**AF0017**	**Hematologic responses to a continuous 30-day exposure to an atmosphere of hypobaric oxygen accompanied by exaggerated activity and inactivity followed by an acute exposure to transverse G forces**

Abstract: From 1969 to 1971 researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX, examined the effects of exposure to high oxygen concentrations at less than atmospheric pressure on red blood cells (RBCs). This study contributed to the knowledge of physiological changes occurring during space flight. Eight active duty military personnel, ages eighteen to twenty-five, participated. The study was carried out in three phases in an environmental chamber: a control period under normal atmosphere, an exposure period under hyperoxic hypobaric conditions followed by a simulated spacecraft re-entry profile, and a recovery period under normal atmosphere. Tests included glucose tolerance tests, chromium-51 measurements of RBC mass, plasma volume measurements using iodine-125 labeled albumin dilution calculations, testosterone clearance measurements with carbon-14 labeled testosterone (blood and urine tests), and carbon-14 glycine labeling to measure RBC survival. RBC mass alteration during hyperoxia was examined and correlated with hormone measurements. Total-body absorbed dose was 139.6 millirad for a 90-day period. During hyperoxia, there was a significant decline in RBC mass. After exposure to hyperoxia, osmotic fragility of erythrocytes increased, plasma hemoglobin levels increased, and reticulocyte counts and RBC survival decreased. The progressive decrease in RBC mass promptly halted on return to ground level atmosphere, and hematological changes returned to control levels within 116 days after exposure to hyperoxic conditions.

Documents:

Title: Hematologic Responses to a Continuous 30 Day Exposure to an Atmosphere of Hypobaric Oxygen Accompanied by Exaggerated Activity and Inactivity Followed by an Acute Exposure to Transverse G Forces. Document Type: Proposal. Date: 1968.

Authors: 1st Lt. Tommy L. Love et al. Title: Glucose Intolerance in Man During Prolonged Exposure to a Hypobaric-Hyperoxic Environment. Journal: *Diabetes*, vol. 20, issue 5. Document Type: Journal Article. Date: May 1971

Authors: Edward C. Larkin; Stephen L. Kimzey. Title: The Response of Erythrocyte Organic Phosphate Levels and Active Potassium Flux to Hypobaric Hyperoxia. Journal: *Journal of Laboratory and Clinical Medicine*, vol. 79, issue 4. Document Type: Journal Article. Date: April 1972

Authors: Edward C. Larkin; J. D. Adams; William T. Williams; David M. Duncan. Title: Hematologic Responses to Hypobaric Hyperoxia. Journal: *American Journal of Physiology*, vol. 223, issue 2. Document Type: Journal Article. Date: August 1972

Authors: Edward C. Larkin; J. D. Adams; William T. Williams; David M. Duncan. Title: Hematologic Responses to Hypobaric Hyperoxia. Journal: *American Journal of Physiology*, vol. 223, issue 2. Document Type: Journal Article. Date: August 1972

Authors: William T. Williams, Ph.D.; Edward C. Larkin, M.D. Title: Red Blood Cell Density and Volume Changes in Men Exposed to Hypobaric Hyperoxia. Document Type: Report. Date: 13 November 1972

Authors: William T. Williams, Ph.D.; Edward C. Larkin, M.D. Title: Red Blood Cell Density and Volume Changes in Men Exposed to Hypobaric Hyperoxia. Document Type: Report. Date: December 1972

AIR FORCE 1944 – 1974 (CONTINUED)

School of Aerospace Medicine, Brooks AFB, TX (continued)

Start Date	Number	Title
1969	**AF0036**	**Reduction of radiation hazard in tritium method of measuring total-body water**

Abstract: In 1969, researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX, investigated the modification of a tritium dilution technique for the measurement of total-body water *in vivo*. To date, no information is available on the number of study participants. Extending the counting time in the procedure or increasing the amount of serum sampled allowed for a reduction in the total amount of tritiated water administered from 250.0 to 25.0 microcuries. Reducing the tritium activity to 25.0 microcuries lowered the exposure dose by a factor of ten—from 18.98 to 1.9 millirads.

Documents: Authors: Capt. Donald F. Logsdon, Jr.; Sgt. James F. Green; S. Sgt. John W. Harper. Title: Reduction of Radiation Hazard in Tritium Method of Measuring Total-Body Water; Attached DD Form 1473. Document Type: Report. Date: November 1969

Start Date	Number	Title
1969	**AF0037**	**Modified 125-I plasma volume procedure**

Abstract: In 1969, researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX, modified a technique for measuring plasma volume using radioactive iodinated serum albumin (RISA). To reduce radiation exposure from RISA I-125 (iodine-125), a procedure was developed that reduced exposure dose by a factor of ten. For a single administration containing 5.0 microcuries, the total-body dose was 5 millirem and for a single dose of 0.5 microcuries, the total-body dose was 0.5 millirem. Standard curves were presented that permitted use of a small plasma sample or low dose of RISA I-125. To date, no information is available on the number of study participants.

Documents: Authors: Capt. Donald F. Logsdon Jr., USAF, BSC; M. Sgt. James F. Green, USAF; Staff Sgt. John W. Harper, USAF. Title: A Modified 125-I Plasma Volume Procedure, Final Report May–July 1969. Document Type: Report. Date: October 1969

Start Date	Number	Title
1969	**AF0077**	**Patient absorbed radiation: a comparative study of standard full mouth series opposed to panoramic radiography**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1969	**AF0086**	**Central venous pressure changes during high +Gz maneuvers and weightlessness during flight**

Abstract: From 1969 until a presently undetermined date, researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX, designed and tested a system for direct

AIR FORCE 1944 – 1974 (CONTINUED)

School of Aerospace Medicine, Brooks AFB, TX (continued)

measurement of intravascular pressures during high-performance flight and determined changes in cardiac filling pressure during high gravity and weightlessness. This study contributed to the knowledge of physiological changes occurring during space flight. Five active duty military personnel participated. A Teflon catheter was inserted into the left median basilic vein and advanced to the superior vena cava-right atrium junction using two to three cubic centimeters of 60 percent Renografin and a 45- to 60-second fluoroscopy exposure. Radiation exposures and results of this study are not available at this time.

Documents: Authors: Capt. George H. Cohen; Lt. Col. William K. Brown. Title: Central Venous Pressure Changes During High +Gz Maneuvers and Weightlessness During Flight. Document Type: Report. Date: 1969 est.

Start Date	Number	Title
1971	**AF0018**	**The relationship of the thyroid hormone metabolism and physical activity in United States Air Force crew personnel**

Abstract: From 1971 to 1972 researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX, studied the effects of physical activity on thyroid hormone metabolism. The turnover rates of thyroxine and triiodothyronine during different levels of physical activity were related to overall performance capabilities. Twenty-five active duty military personnel participated. The radiation exposure from iodine-125 and iodine-131 and results of this study are not available at this time.

Documents: Author: Maj. Alan Balsam. Title: Interim Report and Request for Additional Subjects: Measurement of Thyroxine and Triiodothyronine Turnover and Metabolism in Man. Document Type: Report. Date: 1972

Author: Maj. Alan Balsam. Title: The Relationship of Thyroid Hormone Metabolism and Physical Activity in USAF Aircrew Personnel. Document Type: Protocol. Date: 1972

Start Date	Number	Title
1971	**AF0076**	**Potassium level in normal human subjects**

Abstract: From 1971 to 1976 researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX, determined normal clinical values for potassium levels using tritiated water (water molecules containing tritium, a radioisotope of hydrogen). Concurrent measurements of body water and body potassium in approximately 1,000 aeromedical consult patients generated a database of potentially correlative indexes of body composition. Computer analysis identified the extent of correlations among the indexes. Radiation exposures and results of this study are not available at this time.

Documents: Authors: Robert E. Tatsch; Capt. Robert C. Nelson, USAF. Title: Potassium Level in Normal Human Subjects. Document Type: Protocol. Date: 1971 est.

Authors: Robert C. Nelson; Jerry L. Moore; Richard C. McNee. Title: Correlations Among Body Weight Composition Indices, Potassium Content, Water Content and Density. Journal: *Nutrition.* Document Type: Abstract. Date: 1976 est.

AIR FORCE 1944 – 1974 (CONTINUED)

School of Aerospace Medicine, Brooks AFB, TX (continued)

Start Date	Number	Title
1971	**AF0081**	**Relation of salt depletion and dehydration to +Gz acceleration tolerance and anti-G suit effectiveness**

Abstract: In 1971, researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX, proposed to study anti-G suit protection on the effects of enhanced gravity, volume depletion, and salt deprivation. Additionally, the suppression of renin-aldosterone and negative sodium balance during prolonged acceleration was to be investigated in relation to increased central blood volume. This study was designed to contribute to the knowledge of physiological changes occurring during space flight. The proposal called for twenty-five active duty military personnel. A maximum of three standard chest x-rays were to be taken to evaluate changes in cardiac size during anti-G suit use. Results of this study are not available at this time.

Documents: Authors: Maj. Samuel J. Shubrooks, Jr.; Murray Epstein, M.D. Title: Relationship of Salt Depletion and Dehydration to +Gz Acceleration Tolerance and Anti-G Suit Effectiveness. Document Type: Proposal. Date: 1971 est.

Start Date	Number	Title
1971	**AF0084**	**Correlation of blackout threshold levels in human subjects to +Gz acceleration for sustained periods**

Abstract: From 1971 until 1973, researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX, determined the physiological response to sustained positive acceleration via centrifuge and compared the effectiveness of two antigravity suits. Breathing methods to increase oxygenation during positive acceleration were also investigated. This study contributed to the knowledge of physiological changes occurring during space flight. EKG, heart mass movement during enhanced gravity, direct gastric and esophageal pressures, arterial blood gas and pH, and blood pressure (direct and superficial) measurements were made on fifteen active duty military personnel. Central venous pressure was monitored by an intravenous catheter. The position of the catheter tip was located by fluoroscopy. Chest x-rays were also taken.

Documents: Title: Correlation of Blackout Threshold Levels in Human Subjects to +Gz Acceleration for Sustained Periods. Document Type: Protocol. Date: 1971

Authors: S. D. Leverett, Jr., Ph.D.; R. R. Burton, D.V.M., Ph.D.; 1st Lt. R. J. Crossley, RAF; Lt. Col. E. D. Michaelson, USAF, MC; Maj. S. J. Shubrooks, Jr., USAF, MC. Title: Physiologic Responses to High Sustained +Gz Acceleration. Document Type: Report. Date: December 1972

Authors: Samuel J. Shubrooks Jr.; Murray Epstein; David C. Duncan. Title: Effects of an Anti-G Suit on the Hemodynamic and Renal Responses to Positive (+Gz) Acceleration. Journal: *Journal of Applied Physiology*, vol. 36, no. 3. Document Type: Journal Article. Date: March 1974

AIR FORCE 1944 – 1974 (CONTINUED)

School of Aerospace Medicine, Brooks AFB, TX (continued)

Start Date	Number	Title
1972	**AF0019**	**Measurement of thyroxine/triiodothyronine turnover in relation to level of physical activity in man**

Abstract: In 1972, researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX, investigated the relationship between increased physical activity and thyroid metabolism. This study determined the physiologic response to submaximal exercise before and after a period of intense physical training and related the findings to overall performance capability. Fourteen active duty military personnel participated. Radiation exposure was from iodine-125 labeled thyroxine and iodine-131 labeled triiodothyronine. Radiation exposure levels and results of this study are not available at this time.

Documents: Author: Maj. Alan Balsam. Title: Measurement of Thyroxine and Triiodothyronine Turnover and Metabolism in Relation to Level of Physical Activity in Man. Document Type: Protocol. Date: 1972

Start Date	Number	Title
1972	**AF0085**	**Effect of physical inactivity on myocardial performance and lipid metabolism in United States Air Force aircrew personnel**

Abstract: In 1972, researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX, studied the effects of inactivity on the heart and on lipid metabolism. Tritiated water (water molecules containing tritium, a radioisotope of hydrogen) was the tracer used for total-body water estimates. Sixteen active duty military personnel participated. The results of this study are not available at this time.

Documents: Authors: Dale A. Clark, Ph.D.; Kenneth A. Narahara, M.D.; Margaret F. Allen, M.S. Title: The Occurrence of Hyperlipidemia in Flying and Non-Flying Subjects of the USAF SAM Cardiovascular Disease Study. Document Type: Report. Date: 1970 est.

Title: Hormonal, Substrate and Mineral Levels in Chronic Physical Inactivity—Addendum to Protocol Entitled: The Effect of Physical Inactivity on Myocardial Performance and Lipid Metabolism in USAF Aircrew Personnel. Document Type: Protocol. Date: June 1972 est.

Authors: Dale A. Clark, Ph.D.; Margaret F. Allen, M.A.; Frederick H. Wilson, Jr., B.S. Title: The USAF SAM Cardiovascular Disease Follow-Up Study: 1972 Progress Report. Document Type: Report. Date: 1972 est.

Authors: Capt. Kenneth A. Nashara, USAF, MC; Dale A. Clark, Ph.D. Title: The Effects of Physical Inactivity on Myocardial Performance and Lipid Metabolism in United States Air Force Aircrew Personnel. Document Type: Protocol. Date: 1972 est.

Start Date	Number	Title
1972	**AF0087**	**Roentgenographic evaluation of lung volume and distortion during +Gz acceleration**

Abstract: In 1972, researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX, developed a method for studying lung distortion and changes in lung volume under

AIR FORCE 1944 – 1974 (CONTINUED)

School of Aerospace Medicine, Brooks AFB, TX (continued)

enhanced gravity. Up to sixteen chest x-rays taken during enhanced gravity were used to evaluate distortion. Twelve active duty military personnel participated. The maximum total dose from the x-rays was approximately 600 millirads. The results of this study are not available at this time.

Documents: Authors: Edward D. Michaelson; Marvin A. Sackner; Robert L. Johnson, Jr. Title: Vertical Distribution of Pulmonary Diffusing Capacity and Capillary Blood Flow in Man. Journal: *The Journal of Clinical Investigation*, vol. 52, issue 2. Document Type: Journal Article. Date: February 1973

Start Date	Number	Title
1973	**AF0020**	**Metabolic responses to sustained high G accelerational stress in United States Air Force personnel**

Abstract: In 1973, researchers from the School of Aerospace Medicine at Brooks Air Force Base in San Antonio, TX, surveyed the usefulness of biochemical measurements as predictive indexes of tolerance to enhanced gravity and acceleration stress. Thirty-two active duty military personnel participated. Metabolic responses to acceleration stress were quantified using radioisotopic tracers. Triiodothyronine secretion and plasma concentrations were measured, and 50 to 100 microcuries of iodine-131 labeled triiodothyronine were used as a tracer. Plasma cortisol and urinary glucocorticoid metabolite excretion were used to evaluate adrenal responses to gravitational stress.

Documents: Title: Metabolic Responses to Sustained High G Accelerational Stress in USAF Personnel [includes consent form]. Document Type: Protocol. Date: 1975 est.

Start Date	Number	Title
Unknown	**AF0057**	**Identification and significance of parotid fluid corticosteroids: tritiated cortisol & aldosterone**

(For abstract and documentation, see Brooke Army Medical Center, Houston, TX.)

Start Date	Number	Title
Unknown	**AF0058**	**Adrenal function during bed rest**

Abstract: From a presently undetermined date until 1967, researchers from the School of Aerospace Medicine at Brooks Air Force Base, San Antonio,TX, studied the effect of bed rest on adrenal function. Adrenal function was meaured in eleven healthy airmen. Cortisol secretion rates were measured using one administration of three microcuries of cortisol-1, 2 H^3 (fifty microcuries per microgram). Isolated tritiated urinary metabolites were acetylated with carbon-14 labeled acetic anhydride. Aldosterone secretory rates were determined by using a single administration of three microcuries of d-aldosterone-1, 2 H^3 (100 microcuries per microgram) in thirty milliliters of saline. Plasma 17-OH-CS levels as well as adrenal secretory rate of aldosterone and cortisol were measured before and during periods of bed rest. The circadian rhythm of plasma 17-OH-CS was well maintained during bed rest; however, following a period of ad lib activity, there was

AIR FORCE 1944 – 1974 (CONTINUED)

School of Aerospace Medicine, Brooks AFB, TX (continued)

a diminuation of aldosterone secretory rate during a subsequent bed rest period. Inactivity from bed rest, therefore, did not appear to change adrenal cortisol production. Upon completion of the study, researchers were unable to draw significant conclusions regarding aldosterone production.

Documents: Authors: Fred H. Katz. Title: Adrenal Function During Bed Rest. Journal: *Aerospace Medicine*, vol. 35, issue 9, pp. 849–851. Document Type: Journal Article. Date: September 1964

School of Aerospace Medicine, Colorado Springs, CO

Start Date	Number	Title
1973	**AF0098**	**Effects of staging on the acute adaptation to high terrestrial elevations**

(For abstract and documentation, see Fort Sam Houston, TX.)

School of Aviation Medicine, Randolph AFB, TX

Start Date	Number	Title
Unknown	**AF0112**	**Temporomandibular joint physiology**

Abstract: From a presently undetermined date until 1958, researchers from the School of Aviation Medicine, Randolph AFB, TX studied temporomandibular joint physiology. This project was a subtask of a larger study investigating new methods of dental diagnosis, which began in March 1952. This larger investigation focused on the need to improve the dental health of Air Force personnel and in particular the methods of dental diagnosis (i.e., more sophisticated and effective roentgenography, tomography, and panography), which were considered outmoded. The purpose of the subtask was to develop satisfactory methods of temporomandibular joint x-ray and develop a radiographic procedure that would permit serial radiographs to be made while the patient was in a postural upright position. To date, no information is available on the number of participants. The technique developed during this subtask incorporated a cephalometer that enabled accurate serial radiographs as treatment progressed. The cephalometric instrument was forecasted for use in other studies of the temporomandibular joint.

Documents: From: Clarence E. Laliberte, Chief Warrent Officer, Air Force, Adjutant To: Commanding General, Air University, Maxwell AFB. Subject: Submission of project proposal for approval and coordination, titled "Investigation of new and improved methods of dental diagnosis". Document Type: Memorandum; Proposal. Document Date: 28 January 1952

From: A.P. Gagge, Colonel, US Air Force, Chief, Aeromedical and Human Resources Division, Directorate of Research and Development To: Commandant, Air Force School of Aviation Medicine, Randolph Air Force Base. Subject: Approval for "Investigation of new and improved methods of dental diagnosis". Document Type: Memorandum. Document Date: 17 March 1952

Title: "Investigation of new and improved methods of dental diagnosis" research and development project card [progress report for period 7 May 1952 - 30 June 1952]. Document Type: Report. Document Date: 30 June 1952

AIR FORCE 1944 – 1974 (CONTINUED)

School of Aviation Medicine, Randolph AFB, TX (continued)

Title: "Investigation of new and improved methods of dental diagnosis" - research and development project card [progress report for period 30 June 1952- 07 May 1953]. Document Type: Report. Document Date: 07 May 1953

Title: "Investigation of new and improved methods of dental diagnosis" Air Force supplementary progress report card [progress report for period 7 May 1953- 7 November 1953]. Document Type: Report; Form. Document Date: 07 November 1953

Title: "Investigation of new and improved methods of dental diagnosis" - research and development project card [progress report for period 7 May 1953 - 7 May 1954]. Document Type: Report. Document Date: 07 May 1954

Title: Project #7756: Air Force clinical medicine, termination of task "Temporomandibular joint physiology" [subtask of "Investigation of new and improved methods of dental diagnosis"]. Document Type: Report. Document Date: 30 April 1958

From: Horace A. Corley, First Lieutenant, US Air Force, Research Publications Officer To: Commander, Air University, Maxwell AFB. Subject: Abbreviated progress report (copy of DD forms 613 on task 7756-14) [subtask of "Investigation of new and improved methods of dental diagnosis"]. Document Type: Report; Memorandum. Document Date: 05 May 1958

Southwest, United States

Start Date	Number	Title
1951	**AF0040**	**Flash blindness studies**

(For further information, see Chapter 7—"Human Aspects Research and U.S. Atmospheric Nuclear Weapons Testing.")

Documents: US Atmospheric Nuclear Tests, Nuclear Test Personnel Review. Title: SHOTS ABLE TO EASY, The First Five Tests of the BUSTER-JANGLE Series, 22 October–5 November 1951 (DNA 6024F). Document Type: Report. Date: June 1982

US Atmospheric Nuclear Weapons Tests, Nuclear Test Personnel Review. Title: OPERATION TUMBLER-SNAPPER 1952 (DNA 6019F). Document Type: Report. Date: June 1982

Author: Col. Victor A. Byrnes, USAF, MC. Title: Operation SNAPPER, Project 4.5, Flash Blindness, Report to the Test Director. Document Type: Report. Date: March 1953

Authors: Col. Victor A. Byrnes, USAF, MC; Capt. D. V. L. Brown, USAF, MC; H. W. Rose, M.D.; Paul A. Cibis, M.D. Title: Operation UPSHOT-KNOTHOLE, Project 4.5, Ocular Effects of Thermal Radiation from Atomic Detonation–Flash Blindness and Chorioretinal Burns. Document Type: Report. Date: 30 November 1955

St. Louis Children's Hospital, St. Louis, MO

Start Date	Number	Title
1951	**AF0111**	**Study of diseases of the ear/external otitis**

Abstract: From 1951 until 1955 researchers from the Washington University, St. Louis, MO and the St. Louis Children's Hospital, St. Louis, MO studied ear diseases. The purpose of the study was to

AIR FORCE 1944 – 1974 (CONTINUED)

St. Louis Children's Hospital, St. Louis, MO (continued)

investigate the pathological and biochemical changes occurring in the normal and abnormal skin of the external auditory canal for a better understanding of the origin and treatment of external otitis. The action of x-ray therapy on certain forms of bilateral external otitis was also studied. In each instance, one ear was treated, leaving the untreated ear as a control. Neither the patient nor the otologist was informed as to which ear received the treatment and which was exposed to the placebo. The number of participants and results of this study are not available at this time.

Documents: From: Ben H. Senturia, Project Director To: Commandant, US Air Force School of Aviation Medicine, Attention: Major James E. Lett. Subject: Informal progress report on Army Air Force external otitis project #21-32-026P014A covering the period of December 1, 1951 to February 15, 1952. Document Type: Report. Document Date: 18 February 1952

Subject: Outline for the formal progress report of AAF external otitis project number 21-32-026, contract AF 33(038) 28643, covering the period of December 1, 1951, through June 10, 1952. Document Type: Outline. Document Date: 10 June 1952

Authors: Ben H. Senturia. Title: External otitis: A brief review of some phases of the problem. Journal: Unknown. Document Type: Journal Article; Excerpt. Document Date: 1952

Title: Notice of research project [study of diseases of the external ear]. Document Type: Report. Document Date: March 1955

State University of New York, New York, NY

Start Date	Number	Title
1963	**AF0110**	**Human cold acclimatization**

Abstract: In 1963, researchers from the State University of New York in New York, NY, studied human cold acclimatization. Three healthy female volunteers and one healthy male volunteer participated. Over a period of four months, physiologic reactions to multiple immersions in increasingly colder water were monitored. Basal metabolism, thyroid iodine-131 uptake, and maximal body insulation were measured to assess cold adaptation. Radiation exposure is not available at this time. It was determined that cold water immersion was an unsuccessful method for measuring cold adaptation.

Documents: Authors: Donald W. Rennie, Associate Professor of Physiology, Principal Investigator. Title: Human Cold Acclimatization, Final Report, Contract AF41(609)1718. Document Type: Report. Date: 30 September 1962

From: Gerald J. Merritt, Col., USAF, BSC, Chief, Clinical Investigation & Life Science Division, Air Force Medical Operations Agency, Office of the Surgeon General. To: RECC. Subject: Trip Report to Federal Personnel Records Center–St. Louis. Document Type: Memorandum. Date: 10 June 1994

University Libre de Bruxelles, Brussels, Belgium

Start Date	Number	Title
1963	**AF0109**	**The influence of acute exposure to cold on the thyroid function**

(For abstract and documentation see Hospital Saint-Pierre, Brussels, Belgium.)

AIR FORCE 1944 – 1974 (CONTINUED)

University of California School of Medicine, Los Angeles, CA

Start Date	Number	Title
1965	**AF0042**	**Use of chromosome aberrations to estimate x-ray and gamma-ray dose to man**

Abstract: From 1965 to 1966 researchers from the University of California School of Medicine in Los Angeles, CA, investigated chromosome aberration frequency in lymphocytes as a means of estimating radiation exposure and absorbed dose. Researchers studied the chromosomes of four x-ray technicians, whose exposure to radiation resulted from the normal course of their duties, and one leukemia patient, who had previous radiation therapy. Optimal techniques for making chromosome preparations, numbers of aberrations as a function of dose and culture time, and numbers of chromosome fragments were given. The resulting estimate of dose was affected by lymphocyte culture time, sampling error, sampling time, size, rate, distribution, and quality of radiation dose.

Documents: Authors: Amos Norman, Ph.D.; Masao S. Sasaki, D.Sc.; Richard E. Ottoman, M.D.; Robert C. Veomett, A.B. Title: Use of Chromosome Aberrations to Estimate X-ray and Gamma-Ray Dose to Man. Document Type: Report. Date: December 1967

University of Michigan, Ann Arbor, MI

Start Date	Number	Title
1970	**AF0095**	**Link system of the human torso**

Abstract: From 1970 to 1971 researchers at the University of Michigan in Ann Arbor, MI developed a quantitative description of the mobility of the human torso. Seventy-two anthropometric measurements were taken on twenty-eight male engineering students from the University of Michigan. These data were statistically matched for stature and weight to a 1967 USAF anthropometric survey. Radiographs and photographs were taken from different viewing angles while participants did specific reaching motions. Only 22 of the 28 participants were included in the x-ray study. Each of the twenty-two participants received a maximum of nine x-rays. Prediction equations relating surface anatomy to bone reference points were developed for design of alternative linkage systems.

Documents: Authors: R. G. Snyder; D. B. Chaffin; R. K. Schutz. Title: Link System of the Human Torso. Document Type: Abstract. Date: August 1972

Authors: R. G. Snyder; D. B. Chaffin; R. K. Schutz. Title: Link System of the Human Torso. Document Type: Report. Date: August 1979

University of Texas, Galveston, TX

Start Date	Number	Title
1956	**AF0108**	**Study of the incidence of sickle cell trait and other hemoglobinopathies and the determination of the effect of high altitudes on people with such abnormalities**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

AIR FORCE 1944 – 1974 (CONTINUED)

University of Texas, MD Anderson Hospital and Tumor Clinic, Houston, TX

Start Date	Number	Title
1951	**AF0023**	**Systemic and clinical effects induced in 263 cancer patients by whole body x-irradiation with nominal air doses of 15 to 200 R**

(For further information, see Chapter 2—"Total-Body and Partial Body Irradiation Studies.")

Documents:

From: Lt. Col. John M. Talbot. To: Commandant USAF School of Aviation Medicine. Subject: Trip Report [to University of Texas MD Anderson Cancer Clinic to explore ... making psychomotor observations of some patients undergoing radiotherapy]. Document Type: Memorandum. Date: 3 April 1950

From: 1st Lt. Lando M. Haddock. To: Commanding General Air Materiel Command, Wright-Patterson Air Force Base. Subject: Negotiation of Cost Reimbursement Contract [the University of Texas M. D. Anderson Hospital; includes Project Specifications, Budget, Obligation Authority]. Document Type: Memorandum. Date: 19 October 1950

From: USAF SAM 3J. To: Commanding General Air Materiel Command. Subject: Negotiation of Cost Reimbursement Contact. Document Type: Memorandum. Date: 19 October 1950

Author: Lt. Col. John M. Talbot, USAF, MC, Chief, Dept. of Radiobiology. Title: Trip Report of Visit to MD Anderson Cancer Hospital. Document Type: Report. Date: 22 December 1950

Authors: Maj. Seymour Shwartz, USAF, MC, Research Secretary; Col. Henry M. Sweeney, USAF, Acting Director of Research. Title: Minutes, Research Council Meeting, 14 January 1954. Document Type: Minutes; Excerpt. Date: 21 January 1954

Authors: Col. John E. Pickering, USAF; Maj. Seymour Shwartz, USAF. Title: Request Funds for a One Year Extension of Contract AF 33(038)-20493 with MD Anderson Hospital for: A Study of Intellectual, Perceptual, Psychomotor and Biomedical Status of Patients Following Exposures to Moderate Quantities of Ionizing Radiation. Document Type: Proposal; Contract. Date: 26 January 1954

Title: Minutes, Research Council Meeting, 29 August 1955. Document Type: Minutes; Excerpt. Date: 29 August 1955

Authors: William C. Levin, M.D.; Martin Schneider, M.D.; Herbert B. Gerstner, M.D.; Title: Initial Clinical Reaction to Therapeutic Whole-Body X-Radiation–Some Civil Defense Considerations. Document Type: Report. Date: 1956 est.

Authors: W. K. Sinclair, Ph.D.; A. Cole, M.S. Title: Technic and Dosimetry for Whole Body X-Irradiation of Patients. Document Type: Report. Date: March 1957

Authors: Lowell S. Miller, M.D.; Gilbert H. Fletcher, M.D.; Herbert B. Gerstner, M.D. Title: Systemic and Clinical Effects Induced in 263 Cancer Patients by Whole Body X-Irradiation with Nominal Air Doses of 15 to 200 R. Document Type: Report. Date: May 1957

Author: Herbert B. Gerstner, M.D. Title: Military and Civil Defense Aspects of the Acute Radiation Syndrome in Man. Document Type: Report. Date: November 1957

Author: Lt. Col. Robert B. Payne, USAF, MSC. Title: Effects of Ionizing Radiation upon Human Psychomotor Skills. Document Type: Report. Date: December 1958

Authors: Lowell S. Miller; Gilbert H. Fletcher; Herbert B. Gerstner. Title: Radiobiologic Observations on Cancer Patients Treated with Whole-Body X-Irradiation [includes abstract]. Journal: *Radiation Research*, vol. 4. Document Type: Journal Article. Date: 1958

AIR FORCE 1944 – 1974 (CONTINUED)

University of Texas, MD Anderson Hospital and Tumor Clinic, Houston, TX (continued)

Author: Lt. Col. Robert B. Payne, USAF MSC. Title: Effects of Ionizing Radiation on Human Psychomotor Skills. Journal: *United States Armed Forces Medical Journal*, vol. X, no. 9. Document Type: Journal Article. Date: September 1959

Author: Col. John E. Pickering, USAF, School of Aviation Medicine. Title: Testimony on the Biological and Environmental Effects of Nuclear War Conducted by Special Subcommittee on Radiation, Joint Committee on Atomic Energy, 22–26 June 1959. Document Type: Report. Date: 1959 est.

Author: Col. John E. Pickering, USAF, School of Aviation Medicine. Title: Recorded Testimony on the Biological and Environmental Effects of Nuclear War, Conducted by Special Subcommittee on Radiation, Joint Committee on Atomic Energy, 22–26 June 1959. Document Type: Transcript. Date: 1959 est.

Author: Col. Robert B. Payne, USAF, MSC, Operations Division. Title: Effects of Acute Radiation Exposure on Human Performance. Document Type: Report. Date: February 1963

Title: Aeromedical Review: Effects of Acute Radiation Exposure on Human Performance. Document Type: Report. Date: March 1963

From: Lester J. Peters, Professor and Head, Division of Radiotherapy. To: Col. Gerald J. Merritt, USAF, BSC. Subject: The Search for Records Concerning Human Radiation Experiments Sponsored by the Air Force [includes requesting memorandums and newspaper clippings]. Document Type: Letter. Date: 29 August 1994

Walter Reed General Hospital, Washington, DC

Start Date	Number	Title
1969	**AF0043**	**Threshold for permanent functional and morphological visible damage in humans**

(For abstract and documentation, see Eye Research Foundation of Bethesda, Bethesda, MD.)

Washington University, St. Louis, MO

Start Date	Number	Title
1951	**AF0111**	**Study of diseases of the ear/external otitis**

(For abstract and documentation see St. Louis Children's Hospital, St. Louis, MO.)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX

Start Date	Number	Title
1965	**AF0079**	**Clinical study of gastroesophageal reflux**

(For abstract and documentation, see Frenchay Hospital, Bristol, England.)

AIR FORCE 1944 – 1974 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1966	**CIDD-1-66**	**Serial investigation of a variety of congenital deformities of the brain case and facial skeleton and the response to treatment**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1968	**AF0091**	**Angiographic studies using technetium-99m pertechnetate**

Abstract: From 1968 to 1969, researchers from Wilford Hall Medical Center at Lackland Air Force Base, TX, evaluated the use of technetium-99m (Tc-99m) pertechnetate in venous angiogram studies for the identification of suspected venous occlusion or other obstructive diseases. It was hoped that Tc-99m pertechnetate could substitute for radiopaque dyes in allergic patients. The proposal required forty patients for imaging studies using both routine venous angiographic dyes and Tc-99m. Tc-99m imaging preceded routine studies. The Nuclear Chicago PhoGamma Camera was used to take pictures every four to fifteen seconds after injection of Tc-99m. Radiation exposures and results of this study are unavailable at this time.

Documents: Author: Robert L. Young. Title: Angiographic Studies Using Technetium 99m-Pertechnetate. Document Type: Proposal; File. Date: 20 November 1968

Start Date	Number	Title
1968	**CID0345**	**Bone marrow transplantation in refractory acute leukemia**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1968	**CID37C**	**Effectiveness of various cancer chemotherapeutic agents**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1968	**CIDC-3(68)**	**Treatment of liver cancer by prolonged hepatic artery infusion with chemotherapy**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

AIR FORCE 1944 – 1974 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1969	**AF0001**	**Iodine-131 in cisternography using intrathecally administered radioactive human serum albumin**

Abstract: From 1969 until a presently undetermined date, researchers from Wilford Hall Medical Center at Lackland Air Force Base, TX investigated the use of radioactive iodinated serum albumen (RISA) for imaging cerebrospinal fluid-filled spaces around and within the brain. Cisternography using intrathecally (below the dura mater, one of the meninges of the brain) administered RISA was used to evaluate suspected hydrocephalus, to follow the course of hydrocephalus, and to evaluate the flow of cerebrospinal fluid through surgically implanted ventricular shunts. Sixty-two patients participated. Unless contraindicated, all patients received SSKI before RISA to block thyroid uptake of radioiodine. Using 100 millicuries of iodine-131 RISA, the estimated radiation dose to the central nervous system was 1 rad and the total-body dose was 100 millirads. Results of this study are unavailable at this time.

Documents: Title: Iodine-131 in Cisternography Using Intrathecally Administered Radioactive Human Serum Albumin. Document Type: Event Profile. Date: 1994

Start Date	Number	Title
1969	**CID0245**	**Intracorporeal blood irradiation**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1970	**CIDC-5(70)**	**Hormonal and epidemiological studies in women with carcinoma of the breast**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1970	**CIDC-9(72)**	**Spleen in malignancy**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

AIR FORCE 1944 – 1974 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1970	**CIDI-12**	**Purification and radioimmunoassay of blood clotting factor IX**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1970	**CIDI-15**	**Enzyme diagnosis of myocardial infarction (MI) after heart surgery**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1970	**CIDI-8**	**Safety of intravenous contrast material for patients with previous reactions**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1971	**CIDC-7(71)**	**Retrospective clinical and pathologic analysis of over five hundred patients with thyroid carcinoma**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1971	**CIDD-3**	**Phase I—to investigate the bony changes in the skull incidental to the employment of a fixed maxillary expansion device attached to the posterior maxillary dentition & phase II...**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

AIR FORCE 1944 – 1974 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1971	**CIDI-36**	**Radiomunoassay of human thyrotrophin (TSH)**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1972	**AF0024**	**Role of thyrotropin in goiter and thyroid nodules**

Abstract: From 1972 to 1975 researchers from Wilford Hall Medical Center at Lackland Air Force Base, TX, examined the relationship between thyroid-stimulating hormone (TSH) and goiter and thyroid nodules. Twenty patients with simple or nodular goiter or solitary thyroid nodules and five patients with thyroid carcinoma participated. Baseline TSH levels were determined, and thyroxine suppression of TSH secretion was studied to learn if abnormalities in TSH secretion accompanied thyroid disease. Radiation exposures and results of this study are not available at this time.

Documents:

From: SGHME. To: SGS. Subject: Research Proposal, The Role of Thyrotropin (TSH) in the Pathophysiology of Goiter and Thyroid Nodules [includes consent form]. Document Type: Proposal. Date: 22 December 1971

From: Robert L. Young, Lt. Col., USAF, MC, Chief, Endocrine-Metabolism Service, Department of Medicine, SGHME. To: SGS (Dr. McPhaul). Subject: Semi-Annual Progress Report of Investigations (Your letter, 15 Nov. 72). Document Type: Report; Memorandum. Date: 6 December 1972

From: SGHME. To: SGS/Dr. McPhaul. Subject: Semi-Annual Progress Report on Investigation. Document Type: Report; Memorandum. Date: 29 May 1973

From: Lt. Col. Robert L. Young, USAF, MC, Chief, Endocrine-Metabolic Service. To: Dr. McPaul, SGS. Subject: Final Report on Project F-29(72), Effect of Thyrotropin Releasing Hormone (TRH) on Pituitary Secretion of Growth Hormone (HGH) and Thyrotropin (TSH) In Patients with Acromegaly [includes memorandums initiating study]. Document Type: Memorandum. Date: 19 February 1975

Start Date	Number	Title
1972	**CIDE-3-72**	**Angiographic and hemodynamic findings in the young patient with coronary artery disease**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

AIR FORCE 1944 – 1974 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1972	**CIDF-16-72**	**Measurement of thyroid hormone and thyroid stimulating hormone in pregnancy and early life**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1972	**CIDF-17-72**	**Use of 5-fluorocytosine in mycotic infections**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1972	**CIDF-21-72**	**Role of thyrotropin (TSH) in the pathophysiology of goiter and thyroid nodules**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1972	**CIDI-23**	**Evaluation of systemic immunocompetence in patients receiving local irradiation following radical mastectomy**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1972	**CIDI-38-72**	**Delineation of abscesses by gallium-67**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

AIR FORCE 1944 – 1974 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1972	**CIDI-39-72**	**Development of a radioimmunoassay (in vitro test) for serum triiodothyronine**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1972	**CIDI-40-72**	**Radioimmunoassay of serum human follicle-stimulating hormone (FSH) and luteinizing hormone (LH)**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1972	**CIDS-17-72**	**Controlled study to determine the clinical value of asanguineous hypothermic total-body perfusion (total-body washout or TBW) in the resuscitation and subsequent survival of patients in stage IV hepatic coma**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1973	**AF0002**	**Technetium-99 in bone scanning as a screening test in breast cancer**

Abstract: From 1973 to 1976 researchers from Wilford Hall Medical Center at Lackland Air Force Base, TX, evaluated the diagnostic accuracy of technetium-99m (Tc-99m) bone scanning for metastatic breast cancer. Previous studies showed that if metastases could be identified before surgery, the morbidity and complications of radical surgery could be avoided. Sixty patients participated. A routine head-to-pelvis skeletal survey with Tc-99m polyphosphate or Tc-99m diphosphate was done before breast biopsy. Positive scans were followed with biopsies, laboratory tests, or x-rays, but scans with lesions that could not be biopsied or confirmed were not considered positive. Positive scan lesions not easily biopsied were followed with x-ray studies at three month intervals until confirmation, autopsy, or study end. Radiation exposures and results of this study are not available at this time.

Documents: From: George E. Reynolds, Brig. Gen., USAF, MC, Director of Professional Services, Office of the Surgeon General. To: Wilford Hall USAF Medical Center/SG, Lackland AFB, TX. Subject: Clinical Investigation Proposal #517: Bone Scanning as a Screening Test in Breast Cancer. Document Type: Memorandum. Date: 14 January 1974

AIR FORCE 1944 – 1974 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Title: Bone Scanning as a Screening Test in Breast Cancer. Document Type: Report. Date: 30 June 1974

From: Charles F. Shield, III, Maj., USAF, MC, Chief Resident, General Surgery Service. To: SGS/Lt. Col. Van Riper. Subject: Semi-Annual Progress Report of Investigators, Project C-13 (73) Bone Scanning as a Screen Test in Breast Cancer, SGO-517. Document Type: Memorandum. Date: 13 December 1976

Start Date	Number	Title
1973	**AF0027**	**Technetium-phosphate complexes in the radioisotope diagnosis of avascular necrosis**

Abstract: From 1973 to 1975 researchers from Wilford Hall Medical Center at Lackland Air Force Base, TX, investigated the use of technetium-99m (Tc-99m) phosphate complexes in the early detection of femoral fractures having a high predisposition to develop avascular necrosis. Nine patients participated. The initial study was conducted within forty-eight hours of injury or at the time of diagnosis. X-ray examinations were given for diagnostic purposes. Repeat studies were done at two and five weeks and were repeated if necessary. Radiation exposures for the Tc-99m complexes are unknown at this time. Radiation exposures from the diagnostic x-rays were within the range of conventional x-rays. Results of this study are not available at this time.

Documents: From: George E. Reynolds, B.G., USAF, MC, Director of Professional Services. Subject: Clinical Investigation Proposal #513: Tc-Phosphate Complexes in the Radioisotopic Diagnosis of Avascular Necrosis. Document Type: Memorandum. Date: 19 November 1973

Title: Semiannual Progress Report: 1 July–31 December 1973. Document Type: Report. Date: 31 December 1973

Author: Ellis P. Couch, Maj., USAF, MC. Title: (SGO-513): Tc-Phosphate Complexes in the Radioisotopic Diagnosis of Avascular Necrosis. Document Type: Report. Date: 30 June 1974

Title: Tc-Phosphate Complexes in the Radioisotopic Diagnosis of Avascular Necrosis. Progress Report for July–December 1974. Document Type: Report. Date: 1975 est.

Title: Tc-Phosphate Complexes in the Radioisotopic Diagnosis of Avascular Necrosis. Progress Report for January 1975–June 1975. Document Type: Report. Date: 1975 est.

Start Date	Number	Title
1973	**AF0092**	**Use of sodium iodide I-123 to perform radioiodine uptake and scan**

Abstract: In 1973, researchers from Wilford Hall Medical Center at Lackland Air Force Base, TX, proposed to evaluate thyroid metabolism. To date, no information is available on the number of study participants. Patients were to be given 100 to 400 microcuries of sodium iodide (I-123) by mouth. Scans were to be done at variable intervals to evaluate thyroid I-123 uptake. The researchers estimated that the radiation dose to the thyroid would be 0.1 rad and the whole body dose to be 0.1 millirad per 100 microcuries. Results of this study are not available at this time.

AIR FORCE 1944 – 1974 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Documents: From: William C. Harvey, Lt. Col., USAF, MC, Chief, Nuclear Medicine Service. To: SGS. Title: Use of sodium-iodide-iodine-123. Document Type: Proposal. Date: 1 November 1973

Title: Use of Sodium Iodine I-123 to Perform Radioiodine Uptake and Scan. Document Type: Memorandum. Date: 1973

Start Date	Number	Title
1973	**CID0478**	**Development and testing of a new aortic valve prosthesis**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1973	**CIDI-48**	**Radioimmunoassay of serum androgens: Testosterone, androstenedione, and dehydroepiandrosterone (DHA)**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1973	**CIDI-52-73**	**Radionuclidic imaging of the pancreas**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1973	**CIDI-54-73**	**Technetium diphosphonate as a bone scanning agent**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1973	**CIDI-58-73**	**Tc-phosphate complexes in the radiosotopic diagnosis of avascular necrosis**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

AIR FORCE 1944 – 1974 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1973	**CIDI-59-73**	**Use of sodium iodide I-123 to perform radioiodine uptake and scan**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1973	**CIDI-60-73**	**Radioimmunoassay of plasma aldosterone**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**CID0550**	**Incidence of hypothyroidism following radiotherapy for lymphoma**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**CID0560**	**Combination immunotherapy and chemotherapy in sarcoma**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**CID0564**	**Use of providone-iodine in the prophylaxis of wound infection**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**CID0567**	**Incidence and manifestation of impotence in lymphoma and leukemia**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

AIR FORCE 1944 – 1974 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1974	**CIDF-40-74**	**Comparison of continuous catheter spinal anesthesia with single dose spinal anesthesia for transurethral resection of the prostate**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**CIDI-70**	**Radiology of the pliable solid bolus (marshmallow swallow) as a diagnostic tool in evaluation of the esophagus**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
Unknown	**AF0057**	**Identification and significance of parotid fluid corticosteroids: tritiated cortisol & aldosterone**

(For abstract and documentation, see Brooke Army Medical Center, Houston, TX.)

Start Date	Number	Title
Unknown	**CID0049**	**Phase III trial to preserve the larynx: induction chemotherapy and radiation therapy versus concomitant chemotherapy and radiation therapy versus radiation, RTOG 91-11**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
Unknown	**CID0185**	**Surgical therapy of malignant melanoma with or without regional perfusion**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

AIR FORCE 1944 – 1974 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
Unknown	**CID0463**	**Lymphocyte function in Hodgkin's disease: a prospective study**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
Unknown	**CID0517**	**Bone scanning as a screening test in breast cancer**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
Unknown	**CID0923**	**CACP in refractory epidermoid on carcinoma of the esophagus**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
Unknown	**CID37-4**	**Cis-platinum in refracted epidermoid carcinoma of the head and neck**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
Unknown	**CID37B**	**Chemotherapy of advanced prostatic cancer**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
Unknown	**CID7701**	**CIA vs. ifosfamide alone in sensitive lung cancer**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

AIR FORCE 1944 – 1974 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
Unknown	**CID7756A**	**Aldosterone and angiotensin levels in hypertensive patients**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
Unknown	**CID7756C**	**Cisternography using intrathecally administered radioactive human serum albumin**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
Unknown	**CID7756F**	**Evaluation of the effects of several cancer chemotherapeutic agents on spermatogenesis and meiosis in man**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
Unknown	**CIDE-1**	**Myocardial infarction rehabilitation program**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
Unknown	**CIDS-419**	**Breast cancer and polyps of the colon**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

AIR FORCE 1944 – 1974 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
Unknown	**CIDS-6**	**Plasma protein denaturation during cardiopulmonary bypass and the influence of the reticuloendothelial system upon these changes**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Wright-Patterson AFB Medical Center, OH

Start Date	Number	Title
1973	**AF0025**	**Clinical investigation of gallium-67 citrate**

Abstract: From 1973 to 1976, researchers at the Wright-Patterson Air Force Base Medical Center in Dayton, OH, conducted an Investigational New Drug (IND) clinical program to approve New England Nuclear (NEN) gallium-67 (Ga-67) citrate as a tumor scanning agent. Two hundred fifty cancer patients participated. Ga-67 citrate was administered intravenously at a dose of 0.03 to 0.07 millicurie per kilogram of body weight. Scanning was performed forty-eight hours after administration. Whole body dosimetry was estimated to be 0.25 rad per millicurie dose. NEN Ga-67 became available for routine use in 1976.

Documents:

Title: Proposal for Clinical Investigation, Clinical Investigation of Gallium-67 Citrate. Document Type: Proposal. Date: 1973

From: Joseph E. Wesp, Col., USAF, MC, Commander. To: HQ USAF/SGPAR. Subject: Report: Clinical Investigations of Soft Tissue Tumor Scanning with Gallium-67 Citrate (#488) and Indium-111 DTPA for CNS Cisternography (#489) [includes Clinical Investigation Proposal #488, #489; Clinical Investigation #488, #489]. Document Type: Report; Memorandum; Proposal. Date: 17 April 1974

Title: Clinical Investigation Proposal #489. Document Type: Proposal. Date: 17 April 1974

Title: Clinical Investigation Proposal #488. Document Type: Proposal. Date: April 1974

Title: Clinical Investigation #488. Document Type: Report. Date: July 1974 est.

Title: Clinical Investigation #489. Document Type: Report. Date: July 1974 est.

From: John J. Halki, Col., USAF, MC, Commander. To: HQ USAF/SGPR. Title: Progress Report: Clinical Investigation Proposal #488. Document Type: Report. Date: 18 March 1976

From: Maj. Samuel Sostre, USAF, MC, Chairman, Department of Nuclear Medicine. To: HQ USAF/SGPR. Subject: Final Report, Clinical Investigation Proposal #488, 67-Ga Citrate [includes related memorandums]. Document Type: Memorandum. Date: 20 September 1976

Authors: Maj. Samuel Sostre, MC, USAF; Maj. Harvey L. Handler, MC, USAF. Title: Bony Lesions in Systemic Mastocytosis, Scintigraphic Evaluation. Journal: *Archives of Dermatology*, vol. 113. Document Type: Journal Article. Date: September 1977

AIR FORCE 1944 – 1974 (CONTINUED)

Wright-Patterson AFB Medical Center, OH (continued)

Start Date	Number	Title
1973	**AF0026**	**Evaluation of indium-111 DTPA for cisternography**

Abstract: From 1973 to 1977 researchers from the Wright-Patterson Air Force Base Medical Center in Dayton, OH, evaluated the use of indium-111 pentetic acid (In-111 DTPA) as a tracer for examining cerebrospinal fluid dynamics. Eight patients participated in this study. In-111 DTPA was selected for use in cisternography because the radiation dose and risk of reactions were lower than with conventional radiopharmaceuticals. In-111 was used successfully in the diagnosis of low-pressure hydrocephalus, diagnosing the presence of arachnoid blocks and cysts, and in documenting the patency of ventricular shunts. In-111 was administered in the range of 0.2 to 0.5 millicurie. Whole-body dose was estimated to be 0.275 rad per 0.5 millicurie. Spinal cord dose was 6.10 rads per 0.5 millicurie.

Documents:

From: George E. Reynolds, Brig. Gen., USAF, MC, Director of Professional Services, Office of the Surgeon General. To: SGPR. Subject: Approval of Clinical Investigation Proposal #489: Evaluation of In-111-DTPA for Cisternography. Document Type: Memorandum; Proposal. Date: 14 August 1973

Title: Proposal for Clinical Investigation: Evaluation of 111-In-DTPA for Cisternography [iincludes Memo, Amendment, Statement of Investigator, and Curriculum Vitae]. Document Type: Proposal. Date: 28 September 1973

From: Samuel Sostre, Maj., USAF, MC, Chairman, Dept. of Nuclear Medicine. To: HQ USAF/SGPR. Subject: Clinical Investigation Proposal #489. Document Type: Proposal. Date: 17 April 1974

From: Joseph E. Wesp, Col., USAF, MC, Commander. To: HQ USAF/SGPAR. Subject: Report: Clinical Investigations of Soft Tissue Tumor Scanning with Gallium-67 Citrate (#488) and Indium-111 DTPA for CNS Cisternography (#489). Document Type: Report; Memorandum; Proposal. Date: 17 April 1974

Title: Clinical Investigation Proposal #488. Document Type: Proposal. Date: April 1974

Title: Clinical Investigation #488. Document Type: Report. Date: July 1974 est.

From: John J. Halki, Col., USAF, MC Commander. To: HQ USAF/SGPR. Subject: Progress Report Clinical Investigation #489. Document Type: Report. Date: July 1974 est.

Authors: Stephen N. Wiener, M.D.; Phillip H. Weiss, M.D. Title: Radionuclide Imaging in the Care of the Critically Ill Patient. Journal: *Surgical Clinics of North America*, vol. 55, issue 3. Document Type: Journal Article. Date: 3 June 1975

From: Gunter R. Meng, Col., USAF, MC, Commander; Samuel Sostre, Maj., USAF, MC, Chairman of Dept. of Nuclear Medicine; John J. Halki, Col., USAF, MC, Commander. To: HQ USAF/SGPR. Subject: Clinical Investigation Proposal 489 [includes: two Progress Reports of Clinical Investigation Proposal #489, dated 20 September 1976 and 18 March 1976]. Document Type: Memorandum. Date: 29 September 1976

From: John J. Halki, Col., USAF, MC, Commander. To: HQ USAF/SGPR. Subject: Final Report: Clinical Investigation Proposal #489. Document Type: Memorandum. Date 12 April 1977

Start Date	Number	Title
1956	**AF0094**	**Sizing system for high altitude gloves**

(For abstract and documentation, see Antioch College, Yellow Springs, OH.)

ARMY 1944–1974

Aberdeen Proving Grounds, MD

Start Date	Number	Title
Unknown	**CBDCOM001**	**Attenuation of 1.2 MeV gamma radiation by Soviet and U.S. military vehicles and rail equipment**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Army Chemical Research and Development Laboratories, Army Chemical Center, Edgewood, MD

Start Date	Number	Title
1958	**MRDC021**	**Fate of atropine in man**

Abstract: From 1958 to 1960, researchers from the Army Chemical Research and Development Laboratories in Edgewood, MD, and the Strong Memorial Hospital in Rochester, NY, analyzed atropine metabolism and excretion. One male patient aged 73 from Strong Memorial Hospital and one healthy male aged forty-three from the Army Chemical Center participated. Researchers injected a single two-milligram dose of carbon-14 labeled atropine intramuscularly. Both participants reported dryness of the mouth and slight confusion lasting one to one-and-one-half hours following atropine administration. One participant experienced mild tachycardia (abnormal heart rate acceleration). Eighty-five to 88 percent of radioactivity in the atropine dose was excreted in urine within the first twenty-four hours. Approximately half of the atropine remained intact. Researchers concluded that man does not metabolize atropine as extensively as laboratory animals.

Documents: Authors: R. E. Gosselin; J. D. Gabourel; J. H. Wills. Title: The Fate of Atropine in Man. Journal: *Clinical Pharmacology and Therapeutics*. Document Type: Journal Article. Date: 1960 est.

Army Institute of Surgical Research, Brooke Army Medical Center, Fort Sam Houston, TX

Start Date	Number	Title
1953	**MRDC009**	**Kinetics of radioiodide distribution in chronic renal disease studied by means of the artificial kidney**

Abstract: From 1953 to 1954, researchers from the Army Institute of Surgical Research at Brooke Army Medical Center in Fort Sam Houston, TX, examined iodide distribution and kinetics using estimates of the thyroidal and renal clearances of iodide. Thirteen patients—eight with chronic renal disease and five with non-renal disease—participated. Research participants received, either orally or intravenously, three tracer doses of iodine-131 ranging from 5 to 200 microcuries.

ARMY 1944–1974 (CONTINUED)

Army Institute of Surgical Research, Brooke Army Medical Center, Fort Sam Houston, TX (continued)

Researchers demonstrated that it is possible to remove up to 70 percent of available iodine in vivo within a period of six hours with an artificial kidney.

Documents: Title: Research Progress Report, Annual Report, 01 July 1952–30 June 1953. Document Type: Report; Excerpt. Date: 30 June 1953

Authors: David V. Becker, M.D.; Lamont E. Danzig, M.D. Title: Kinetics of Radioiodide Distribution in Chronic Renal Disease Studied by Means of the Artificial Kidney. Journal: *Transactions of the American Goiter Association.* Document Type: Journal Article. Date: Unknown

Start Date	Number	Title
1962	**MRDC010**	**Study of blood loss during excision of third degree burns**

Abstract: From 1962 to 1963, researchers from the Army Institute of Surgical Research at Brooke Army Medical Center in Fort Sam Houston, TX, investigated blood loss during excision of burn wounds. Sixteen burn patients, both children and adults, participated. Blood volume was estimated before and after surgery using one to five microcuries of iodine-131 labeled albumin. The need for postoperative estimation of blood volume was the greatest in children.

Documents: Title: Study of Blood Loss During Excision of Third Degree Burns. Document Type: Event Profile. Date: 1994

Start Date	Number	Title
1963	**MRDC011**	**Study of methods for measuring blood loss during surgery**

Abstract: From 1963 to 1964, researchers from the Army Institute of Surgical Research at Brooke Army Medical Center in Fort Sam Houston, TX, evaluated five methods of estimating operative blood loss and the subsequent need for transfusion. Twenty adult female patients undergoing abdominal and vaginal hysterectomies participated. Each participant received four to five microcuries of iodine-131 labeled human serum albumin to estimate the plasma volume before and after the surgical procedure. All methods of direct measurement were found to be clinically useful and accurate. The blood volume, as measured in the Volemetron, was found to be the simplest and most practical method of measuring operative blood loss. In the absence of Volemetron, the gravimetric method was considered the most valuable and more useful than blood volumes determined in the standard manner. The colorimetric method was as accurate as the gravimetric, but it was not as practical unless the specific equipment for continuous measurement was available. The patient-weighing technique was of value only to validate other methods. Microhematocrits, when used alone, were misleading, but they were necessary for evaluation of blood volume determinations.

Documents: Authors: Robert C. Moore, Junior, Lt. Col., Medical Corps; Peter C. Canizaro; Capt. Robert B. Sawyer, Medical Corps; Joseph C. Darin; Lt. Col. John A. Moncrief, Medical Corps. Title: An Evaluation of Methods for Measuring Operative Blood Loss. Journal: *Anesthesia and Analgesia—Current Researches.* Document Type: Journal Article. Date: January–February 1965

ARMY 1944–1974 (CONTINUED)

Army Institute of Surgical Research, Brooke Army Medical Center, Fort Sam Houston, TX (continued)

Start Date	Number	Title
1965	**MRDC012**	**Study of post-injury hemodynamics in burn patients**

Abstract: From 1965 to 1970, researchers from the Army Institute of Surgical Research at Brooke Army Medical Center in Fort Sam Houston, TX, studied changes in blood volume and hemodynamics during burn resuscitation. Ten burn patients participated in the study. Plasma volume was measured in each participant with tracer doses of iodine-131 labeled human serum albumin. Early obligatory plasma volume loss was identified, giving way to small obligatory gain after twenty-four hours. No significant correlation was found between volume restoration and the colloid concentration of replacement fluids. This study provided a foundation for recommending buffered saline replacement fluid for acute burn treatment on the battlefield. This was also one of the early studies supporting the present-day practice of buffered saline use during care of burn patients in the first twenty-four hours after injury.

Documents: Title: Study of Post-Injury Hemodynamics in Burn Patients. Document Type: Event Profile. Date: 1994

Start Date	Number	Title
1966	**MRDC013**	**Study of the efficacy of buffered saline in replacing blood volume after measured blood loss in normal volunteers**

Abstract: From 1966 to 1967, researchers from the Army Institute of Surgical Research at Brooke Army Medical Center in Fort Sam Houston, TX, evaluated normal saline as a replacement fluid after blood loss. Thirty-three healthy volunteers participated. Plasma volume was measured before and at two time intervals after donating blood. Tracer doses of iodine-131 labeled human serum albumin were used to measure the plasma volume. Saline was an effective replacement fluid. Replacement volume was quantified and has become common practice.

Documents: Title: Study of the Efficacy of Buffered Saline in Replacing Blood Volume After Measured Blood Loss in Normal Volunteers. Document Type: Event Profile. Date: 1994

Start Date	Number	Title
1967	**MRDC014**	**Study of the effects of salt ingestion during intense physical conditioning in a hot climate**

Abstract: From 1967 to 1968, researchers at the Army Institute of Surgical Research Unit at Brooke Army Medical Center in Fort Sam Houston, TX, investigated electrolyte metabolism during heat acclimatization. Twenty-four basic trainee volunteers participated in the study. Fifteen participants were intravenously administered one microcurie/kg of potassium-42 chloride for exchangeable potassium determination and a dose of aldosterone-2-tritium for assessment of secretory rate. Nine subjects were administered fifty microcuries of sodium sulfate (containing sulphur-35) for the determination of extracellular fluid volume. Results indicated that massive sodium loading during acclimatization, then a common practice in troops, may increase the

ARMY 1944–1974 (CONTINUED)

Army Institute of Surgical Research, Brooke Army Medical Center, Fort Sam Houston, TX (continued)

severity of potassium depletion and the risk of serious environmental heat injury and rhabdomyolysis, an acute and sometimes fatal disease characterized by the destruction of skeletal muscle. This study added to the knowledge of environmental heat injuries and impacted troop training practices in hot climates.

Documents: Authors: James P. Knochel et al. Title: Pathiophysiology of Intense Physical Conditioning in a Hot Climate. Journal: *The Journal of Clinical Investigation*, vol. 51, issue 2, 1972. Document Type: Journal Article. Date: February 1972

Start Date	Number	Title
1971	**MRDC015**	**Study of the applicability of xenon scan on the diagnosis of inhalation injury**

Abstract: From 1971 to 1972, researchers from the Army Institute of Surgical Research at Brooke Army Medical Center, Fort Sam Houston, TX, evaluated the effectiveness of xenon-133 (Xe-133) lung scanning in the diagnosis of inhalation injury. Fifty burn patients participated in the study. The lung scan involved an injection of six to ten microcuries of Xe-133, dissolved in saline, into either the antecubital or femoral vein. The scan was found to facilitate early diagnosis and, in turn, early therapy for diagnosed injury, thus reducing secondary bacterial complications and the high mortality associated with inhalation injury.

Documents: Authors: Joseph A. Moylan et al. Title: Early Diagnosis of Inhalation Injury Using 133-Xenon Lung Scan. Journal: *Annals of Surgery*, vol. 176, issue 4. Document Type: Journal Article. Date: October 1972

Army Medical Nutrition Laboratory, Denver, CO

Start Date	Number	Title
1956	**RECC001**	**Food irradiation program**

(For further information, see Chapter 8—"Food Irradiation".)

Documents: From: Lorraine A. Schultz, Maj., QMC Adjutant. To: The Surgeon General, Department of the Army, Attn.: Research and Development Division (Lt. Col. William W. Cox), Through: The Quartermaster General, Department of the Army, Attn.: Research and Engineering Division. Subject: FEA 57029, Troop Acceptability of TTP Foods (Phase II). Document Type: Memorandum. Date: 10 July 1954

From: A. W. Harvey, Chairman, QMC-AMS Task Group. To: Col. T. E. Huber, Member, QMC-AMS Task Group, Office of the Surgeon General, Department of the Army. Subject: [forwarding of: Plan of Test for Preference for Irradiated Pork, FEA 57029, for concurrence]. Document Type: Letter. Date: 10 January 1958

Title: Statement of Work for the Establishment of a Laboratory to Conduct Research with Radiation Preserved Food Products at Fort Lee. Document Type: Statement; Contract. Date: 16 January 1958

From: Tyron E. Huber, Col., MC, Chief, Medical Research Branch, Research and Development Division. To: Dr. Arnold Lehman, Chief, Division of Pharmacology, Dept. of Health, Education and Welfare, Food and Drug Administration. Subject: [request for advisement regarding whether to follow up physical examinations at six months or three months for Fort Lee participants in irradiated foods tests]. Document Type: Letter. Date: 6 February 1958

ARMY 1944–1974 (CONTINUED)

Army Medical Nutrition Laboratory, Denver, CO (continued)

From: A. J. Lenman, M.D., Director, Division of Pharmacology, Bureau of Biological and Physical Sciences. To: Tyron E. Huber, Colonel, MC, Chief, Medical Research Branch, Research and Development Division, Department of the Army, Office of the Surgeon General. Subject: [opinion supporting follow up physical examination for food irradiation test at three months.]. Document Type: Letter. Date: 12 February 1958

From: A. W. Harvey, Chairman, QMC-AMS Task Group. To: Col. T. E. Huber, Member, QMC-AMS Task Group, Office of the Surgeon General, Department of the Army. Subject: [reply to letter of 6 February 1958 and concurrent review with regard to correction to protocol in order to avoid errors of interpretation and intent]. Document Type: Letter. Date: 14 February 1958

From: Tyron E. Huber, Col., MC, Chief, Medical Research Branch, Research and Development Division. To: The Surgeon General, Dept. of Army. Subject: Conversation with Mr. Skinner, Lederle Laboratory, Relative to Supply of Botulinus Antitoxin. Document Type: Memorandum. Date: 19 February 1958

From: Tyron E. Huber, Colonel, MC, Chief, Medical Research Branch, Research and Development Division. To: Dr. A. W. Harvey, Office of the Scientific Director, QM Research and Engineering Command. Subject: [reply to letter dated 14 February 1958 requesting concurrence in the Plan of Test and Scope of Work]. Document Type: Letter. Date: 24 February 1958

From: Tyron E. Huber, Col., MC, Chief, Medical Research Branch, Research and Development Division. To: Dr. A. W. Harvey, QM Research and Engineering Command. Subject: [reply to letter regarding amendment of paragraph to scope of work for: Plan of Test for Soldier for Irradiated Pork]. Document Type: Letter. Date: 6 March 1958

From: William W. Cox, Lt. Col., Medical Research Br. To: Memorandum for the Record. Subject: Telephone Conversation with Dr. A. Harvey, Natik, Mass., re: the Irradiated Food Acceptance Tests to be conducted at Fort Lee, VA. Document Type: Memorandum. Date: 12 March 1958

From: A. W. Harvey, Chairman, QMC-AMS Task Group. To: Col. T. E. Huber, Member, QMC-AMS Task Group, Office of the Surgeon General, Department of the Army. Subject: [reply to letter dated 7 March 1958, confirming implementation for projected soldier preference test schedule]. Document Type: Letter. Date: 13 March 1958

From: Carl J. Koren, Lt. Col., MSC, Commanding. To: Col. Ervin L. Kener, QMC, Commandant, Quartermaster Food and Container Institute. Attn.: Lt. Col. Robert Ryer, III, Medical Service Liaison Officer. Subject: Medical Protection Plan for the Irradiated Food Taste Panel. Document Type: Memorandum. Date: 20 March 1958

From: Lorraine A. Schultz, Maj., QMC, Adjutant. To: The Surgeon General, Department of the Army, Attn.: Research and Development Division (Col. T.E. Huber), Through: The Quartermaster General, Department of the Army, Attn.: Research and Engineering Division. Subject: FEA 57029, Troop Acceptability of TTP Foods. Document Type: Memorandum. Date: 21 March 1958

From: William W. Cox, Lt. Col., MC, Chief, Medical Research Branch, Research and Development Division. To: Dr. A. W. Harvey, Office of the Scientific Director, QM Research and Engineering Command. Subject: [concerns regarding postponement of test date, filming, and request for a task force meeting]. Document Type: Letter. Date: 25 March 1958

From: A. W. Harvey, Chairman, QMC-AMS Task Group. To: Lt. Col. William W. Cox, Office of the Surgeon General, Department of the Army. Subject: [reply to letter of 26 March, delay of start date for food preference test and plans to coordinate any changes or publicity]. Document Type: Letter. Date: 6 April 1958

From: William W. Cox, Lt. Col., MC, Chief, Medical Research Branch, Research and Development Division. To: Dr. Arnold Lehman, Chief, Division of Pharmacology, Food and Drug Administration, Dept. of Health, Education and Welfare. Subject: [forwarding of letter from Scientific Director, QM Research and Engineering Command Field Evaluation Agency, Fort Lee, re: preliminary report of test FEA 57029, Troop Acceptability of TTP Foods]. Document Type: Letter. Date: 26 May 1958

From: Howard W. Hembree, Scientific Director. To: Commanding General, QM R&E Command, US Army. Subject: Preliminary Report of Test FEA 57029, Troop Acceptability of TTP Foods–Phase II. Document Type: Report; Memorandum. Date: 30 June 1958

ARMY 1944–1974 (CONTINUED)

Army Medical Nutrition Laboratory, Denver, CO (continued)

From: Erwin O. Kruegel, Chief Applications Engineering Branch, Research and Engineering Division. To: The Surgeon General, Department of the Army, Attn.: Research and Development Division (Lt. Col. William W. Cox). Subject: FEA 57029, Troop Acceptability of TTP Foods (Phase II) [forwarding copies of test]. Document Type: Memorandum. Date: 10 July 1958

From: William W. Cox, Lt. Col., MC, Chief, Medical Research Branch, Research and Development Division. To: The Quartermaster, Department of the Army, Attn.: Chief, Research and Engineering Division. Subject: FEA 57029, Troop Acceptability of TTP Foods (Phase II). Document Type: Memorandum. Date: 21 July 1958

Authors: Edwin L. Bierman, Capt., MC, Surgeon General's Representative; Title: [completion of physical examinations of soldiers who participated in testing of irradiated food]. Document Type: Report. Date: 13 August 1958

From: Gustaf A. Engstrom, Col., QMC, Commanding. To: The Surgeon General, Department of the Army, Attn.: Lt. Col. William W. Cox, Chief, Medical Research Br., R&D Div. Subject: Physical Examination of Fort Lee Personnel Who Participated in the Conduct of FEA 57029, Troop Acceptability of TTP Foods. Document Type: Memorandum. Date: 26 August 1958

From: John B. Youmans, M.D., Technical Director of Research. To: For the Record. Subject: [meeting discussion regarding continuation of irradiated food tests at Fort Lee]. Document Type: Memorandum. Date: 6 October 1958

From: Edwin L. Bierman, Capt., MC. To: Lt. Col. William W. Cox, Chief, Medical Research Br., R&D Division, Office of the Surgeon General, Department of the Army. Subject: [Fort Lee Schedule for Irradiated Food Testing and Request to Transfer an M.D. for the Entire Test Period]. Document Type: Letter. Date: 27 October 1958

From: Edwin L. Bierman, Capt., MC. To: Lt. Col. William W. Cox, Chief, Medical Research Br., R&D Division, Department of the Army. Subject: [letter with enclosure of schedule for irradiated food testing at Fort Lee]. Document Type: Letter. Date: 27 October 1958

Author: Edwin L. Bierman, Capt., MC, Surgeon General's Representative. Title: Physical Examinations. Document Type: Report; Roster. Date: 31 October 1958

From: William W. Cox, Lt. Col., MC, Chief, Medical Research Branch. To: Commandant, Quartermaster Food and Container Institute, QM Research and Engineering Command, US Army, through the Quartermaster General, Department of the Army. Subject: Request Authority to Feed Beef, Flour, and White Potatoes for Test of Troop Acceptability of TTP Foods. Document Type: Memorandum. Date: 17 November 1958

Author: Chimer D. Moore, Jr., Capt., MC, Surgeon General's Representative. Title: Approved Volunteers for Consumption of Irradiated Food 1–8 December. Document Type: Report; Roster. Date: 28 November 1958

Author: C. D. Moore, Jr., Capt., MC, Medical Test Officer. Title: Human Consumption of Irradiated Food–Medical Aspects. Document Type: Report; Fact Sheet. Date: 22 January 1959

From: C. D. Moore, Jr., Capt., MC. To: Lt. Col. William W. Cox, Chief, Medical Research Branch, Research and Development Division, Office of the Surgeon General. Subject: [regarding procedure for keeping the records of volunteers on file according to Army procedures]. Document Type: Letter. Date: 27 January 1959

From: C. D. Moore, Jr., Capt., MC. To: Lt. Col. William W. Cox, Chief, Medical Research Branch, Office of the Surgeon General. Subject: [reports of laboratory study findings for human subjects involved in the last phase of QM FEA Test No. 58040]. Document Type: Letter. Date: 9 February 1959

From: John D. Martz, Jr., Col., QMC, Chief, Research & Engineering Division. To: C/R&D. Subject: Human Feeding of Irradiated Food. Document Type: Memorandum. Date: 28 October 1959

ARMY 1944–1974 (CONTINUED)

Army Medical Nutrition Laboratory, Denver, CO (continued)

From: William B. Levin, Lt. Col., Radiation Officer, Research & Engineering Division. To: The Surgeon General. Subject: Forwarding of Comment #2, Dated 28 October 1959, Re: Tests Involving Human Consumption of Irradiated Food at Fort Lee. Document Type: Memorandum. Date: 9 November 1959

Title: Comments on the Availability of Personnel at Fort Lee for Participation in Irradiated Food Tests; Organizational Activities (June through December 1958). Document Type: Report. Date: 1959 est.

Army Natick Research, Development, and Engineering Center, Natick, MA

Start Date	Number	Title
1956	**RECC001**	**Food irradiation program**

(For abstract and documentation, see Army Medical Nutrition Laboratory, Denver, CO.)

Army Quartermaster School, Fort Lee, VA

Start Date	Number	Title
1956	**RECC001**	**Food irradiation program**

(For abstract and documentation, see Army Medical Nutrition Laboratory, Denver, CO.)

Biomedical Laboratory, Edgewood, MD

Start Date	Number	Title
Unknown	**MRDC025**	**Measurement of central action of psychotropic agents by pupillometry**

Abstract: From a presently undetermined date until 1973, researchers from the Biomedical Laboratory in Edgewood, MD, assessed the effects of mind-altering drugs in the central nervous system by measuring the diameter of the pupil. Six volunteers had cranial x-rays taken to measure calcium deposits in the pineal gland, a pine-cone shaped gland within the brain that secrets melatonin. The degree of calcification was correlated to blood melatonin levels. Of the six participants, only one showed any sign of calcification, but this finding was regarded as questionable.

Documents: From: Lt. Col. Samuel A. Cucinell, M.D., Chief, Clinical Research Branch. To: Director of Biomedical Laboratory. Subject: Volunteer Report for April 1973 [includes summaries of several clinical investigation tests]. Document Type: Memorandum. Date: 14 May 1973

ARMY 1944–1974 (CONTINUED)

Brooke Army Medical Center, Houston, TX

Start Date	Number	Title
1956	ACIR56000-A	**Platelet transfusion—efficiency and methods to improve current results in thrombocytopenia patients**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1964	ACIR64000	**Survival rates of testis tumors (Army-wide investigational treatment study)**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1972	ACIR72000-K	**Conservative surgery following preoperative radiotherapy for lung cancer**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1972	ACIR72000-L	**Evaluation of gallium-67 as a scanning agent for malignant neoplasms**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1972	ACIR72000-N	**Seminoma of the testicle: prophylactic mediastinum irradiation vs. periaortic and pelvic irradiation alone**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

ARMY 1944–1974 (CONTINUED)

Brooke Army Medical Center, Houston, TX (continued)

Start Date	Number	Title
1972	**ACIR72000-O**	**Phase I protocol for the evaluation of combined radiotherapy and chemotherapy for stage IIb, IIIa, and IIIb Hodgkin's disease**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1973	**ACIR73000-H**	**Clinical evaluation of cisternography utilizing 111-indium DTPA (1973)**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1973	**ACIR73000-M**	**Use of fluorine-18 as a bone scanning agent in a variety of bone diseases**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**ACIR74000-D**	**Evaluation of combined radiotherapy and chemotherapy for stages IIb, IIIa and IIIb Hodgkin's disease, SWOG 160**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**ACIR74000-N**	**Clinical evaluation of the thyroid by in vivo radionuclidic studies utilizing iodide-123**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

ARMY 1944–1974 (CONTINUED)

Charity Hospital, New Orleans, LA

Start Date	Number	Title
Unknown	**RECC002**	**Biological decay rates of chloride in normal and diseased man, determined with long-life radiochloride, Cl-36**

Abstract: From a presently undetermined date until 1952, researchers from Tulane University in New Orleans, LA, studied the metabolism and biological decay of a long-lived isotope of chlorine (Cl-36). Six patients at Charity Hospital in New Orleans participated; two were controls, two had moderately severe chronic congestive heart failure, and two had severe chronic congestive heart failure. Cl-36 decay rates were determined both on a daily basis and long-term basis. Distribution equilibrium of Cl-36 was reached sometime after the first forty-eight hours and most probably by seventy-two hours following injection for the non-edematous patients. It was determined that five days might be required for detailed and accurate investigations based upon establishment of equilibrium of distribution, especially for subjects with edema.

Documents:

Author: G. E. Burch. Title: Peripheral Blood Vessels, 01 October–31 December 1949. Document Type: Report. Date: 31 December 1949

Author: G. E. Burch. Title: Behavior of Peripheral Blood Vessels, 01 January–31 March 1949. Document Type: Report. Date: 1949 est.

Author: G. E. Burch. Title: Behavior of Peripheral Blood Vessels, 01 April–30 June 1949. Document Type: Report; Excerpt. Date: 1949 est.

Author: G. E. Burch. Title: Behavior of Peripheral Blood Vessels, 01 July–30 September 1949. Document Type: Report; Excerpt. Date: 1949 est.

Authors: G. E. Burch; S. A. Threefoot; C. T. Ray. Title: Rates of Turnover and Biologic Decay of Chloride and Chloride Space in the Dog Determined with the Long-Life Isotope, Cl 36. Journal: *Journal of Laboratory and Clinical Medicine*, vol. 35, issue 3. Document Type: Journal Article. Date: March 1950

Author: G. E. Burch. Title: Behavior of Peripheral Blood Vessels. Document Type: Report; Excerpt. Date: 11 April 1950

Author: G. E. Burch. Title: Peripheral Blood Vessels, 01 January–30 June 1950. Document Type: Report. Date: 30 June 1950

Author: G. E. Burch. Title: Peripheral Blood Vessels, 01 July–31 December 1950. Document Type: Report. Date: 31 December 1950

Author: G. E. Burch. Title: Peripheral Blood Vessels. Document Type: Report. Date: 30 June 1951

Title: Effects of Irradiation. Document Type: Report. Date: 1 November 1951

Author: G. E. Burch. Title: Peripheral Blood Vessels (Final Report). Document Type: Report. Date: 31 December 1951

Authors: C. T. Ray; G. E. Burch; S. A. Threefoot. Title: Biologic Decay Rates of Chloride in Normal and Diseased Man, Determined with Long-Life Radiochloride. Journal: *The Journal of Laboratory and Clinical Medicine*, vol. 39, issue 5. Document Type: Journal Article. Date: May 1952

Authors: George E. Burch, M.D.; John J. Walsh, M.D. Title: The Excretion and Biologic Decay Rates of Cl with a Consideration of Space, Mass, and Distribution in Dogs. Journal: *Journal of Laboratory and Clinical Medicine*, vol. 54, issue 1. Document Type: Journal Article. Date: July 1959

Title: Search of Nuclear Science Abstracts for Information on Tracer Techniques. Document Type: Search Printout. Date: 1994

ARMY 1944–1974 (CONTINUED)

Charity Hospital, New Orleans, LA (continued)

Start Date	Number	Title
Unknown	**RECC003**	**Urinary excretion and biological decay periods of radiomercury labeling a mercurial diuretic in normal and diseased man**

Abstract: From a presently undetermined date until 1950, researchers from Tulane University in New Orleans, LA, analyzed the rate of urinary excretion of mercury-203 (Hg-203) and mercury-206 (Hg-206), in an organic mercurial diuretic. Problems associated with toxicity and biological decay rates were also investigated. Eighty-three patients at Charity Hospital in New Orleans participated. The diuretic was administered either intravenously or intramuscularly. The quantity of radioactive material administered varied from 10 to 100 microcuries depending on the time frame. Collections of urine and blood were made until there was no detectable radioactivity. Mercury was excreted rapidly when cardiovascular and renal functions were normal, one-half being excreted in approximately one to eight hours. The rate of excretion was slightly less rapid when the drug was administered intramuscularly than when administered intravenously. Chronic congestive heart failure tended to diminish the rate of excretion, although individual variations were large. The state and stage of congestive heart failure influenced the rate of excretion. The rate of excretion of radiomercury was considerably impaired by renal insufficiency; the degree of impairment may be great enough to result in accumulation of toxic quantities of mercury with frequent administration of the drug.

Documents:

Author: G. E. Burch. Title: Peripheral Blood Vessels, 01 October–31 December 1949. Document Type: Report. Date: 31 December 1949

Author: G. E. Burch. Title: Behavior of Peripheral Blood Vessels, 01 January–31 March 1949. Document Type: Report. Date: 1949 est.

Author: G. E. Burch. Title: Behavior of Peripheral Blood Vessels, 01 April–30 June 1949. Document Type: Report; Excerpt. Date: 1949 est.

Author: G. E. Burch. Title: Behavior of Peripheral Blood Vessels, 01 July–30 September 1949. Document Type: Report; Excerpt. Date: 1949 est.

Author: G. E. Burch. Title: Behavior of Peripheral Blood Vessels. Document Type: Report; Excerpt. Date: 11 April 1950

Author: G. E. Burch. Title: Peripheral Blood Vessels, 01 January–30 June 1950. Document Type: Report. Date: 30 June 1950

Authors: George Burch et al. Title: The Urinary Excretion and Biologic Decay Periods of Radiomercury Labeling a Mercurial Diuretic in Normal and Diseased Man. Journal: *The Journal of Clinical Investigation*, vol. XXIX, issue 9. Document Type: Journal Article. Date: September 1950

Author: G. E. Burch. Title: Peripheral Blood Vessels, 01 July–31 December 1950. Document Type: Report. Date: 31 December 1950

Author: G. E. Burch. Title: Peripheral Blood Vessels (Final Report). Document Type: Report. Date: 31 December 1950

Authors: G. E. Burch. Title: Peripheral Blood Vessels. Document Type: Report. Date: 30 June 1951

ARMY 1944–1974 (CONTINUED)

Chemical and Radiological Laboratories, Edgewood, MD

Start Date	Number	Title
1954	**MRDC022**	**(Chemical Corps Research & Engineering Command at the Edgewood Area of Aberdeen Proving Grounds)**

Abstract: From 1954 until a presently undetermined date, researchers from the Army Chemical Center, MD (which is now the Edgewood area of Aberdeen Proving Grounds), studied the excretion rates of atropine and its metabolic products. Ten healthy volunteers received parenteral injections of synthetic atropine labeled with radioactive carbon. Results revealed therapeutic uses for atropine and aided in the development of more persistent atropine analogs.

Documents: Title: (Chemical Corps Research & Engineering Command at the Edgewood Area of Aberdeen Proving Grounds). Document Type: Event Profile. Date: 1994

Cook County Hospital, Chicago, IL

Start Date	Number	Title
1970	**MRDC018**	**Prediction of tissue loss in human frostbite with xenon-133**

Abstract: From approximately 1970 until 1971, researchers from the Arctic Medical Research Laboratory, Fort Wainwright, AK conducted a study at Cook County Hospital, Chicago, IL using xenon-133 (Xe-133) to predict tissue loss in human frostbite. Blood flow in the digits of patients with severe frostbite was studied by the xenon clearance method. There were twenty male black and white participants, all accidental frost-bite victims presented at the Emergency Department. Approximately 0.03 to 0.05 cc of a saline solution of Xe-133, with an activity of less than fifty microcuries was injected into the cutaneous region of tissue. Fifty-six Xe-133 injections were made, forty in the hand and sixteen in the feet. Seven patients in the group lost a portion of two or more digits. Thirteen patients suffered no tissue loss. Flow in the viable digits averaged 4.6 milliliters per 100 grams per minute, while that of the digits which ultimately became necrotic, averaged only 0.6 milliliters per 100 grams per minute. In only one case did the flow in the necrotic group exceed one milliliter per 100 grams per minute. If this level of flow was chosen as a dividing line between viable and necrotic tissues, the accuracy of predicting the outcome of frostbitten tissues would have been seventy-five percent. Used only to predict viability, the test would have been ninety-seven percent accurate. The researchers noted that the reliability of the test could be improved by injecting smaller amounts of xenon, restricting injections to the proximal phalanges, and repeating the test after twenty-four hours when there was a low flow recording. Overall, the researchers observed depressed blood flow in severely frostbitten tissue and found Xe-133 generally useful in the prediction of tissue loss.

Documents: Authors: David S. Summer; John A. Boswick, Jr.; Thomas L. Criblez; William H. Doolittle. Title: Prediction of tissue loss in human frostbite with xenon - 133. Journal: *Surgery*, vol. 69, issue 6. Document Type: Journal Article. Document Date: June 1971

ARMY 1944–1974 (CONTINUED)

Fitzsimons Army Medical Center, Aurora, CO

Start Date	Number	Title
1954	**ACIR54000-A**	**Observations on the mechanism of the renal clearance of 131-I**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1954	**ACIR54000-B**	**Renal function and 131-I clearance in hyperthyroidism and myxedema**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1959	**ACIR59000**	**Evaluation of renal function utilizing radioiodine labeled Diodrast**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1962	**ACIR62000**	**Radioisotopes in pulmonary physiology and pathology (I-131 & Xe-133)**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1967	**ACIR67000-A**	**Detection of pulmonary emboli using 133-xenon and macroaggregated human serum albumin (MAAG) 131-I**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1967	**ACIR67000-B**	**Evaluation of technical factors of the brain scan and their relationship to diagnostic accuracy**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

ARMY 1944–1974 (CONTINUED)

Fitzsimons Army Medical Center, Aurora, CO (continued)

Start Date	Number	Title
1967	**ACIR67000-C**	**Regional ventilation perfusion relationships of the lung, its measurement of 133-xenon and a linear scanner**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1967	**ACIR67000-D**	**Value of rose bengal 131-I in evaluating jaundiced patients**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1967	**ACIR67000-E**	**Ultrasound in placental localization**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1968	**ACIR68000**	**Effects of selective coronary arteriography on myocardial blood flow in man**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1969	**ACIR69000-A**	**Roentgenographic technique for measuring lung volume, FAMC 69/140**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

ARMY 1944–1974 (CONTINUED)

Fitzsimons Army Medical Center, Aurora, CO (continued)

Start Date	Number	Title
1969	**ACIR69000-B**	**Quantitative lung scanning in pulmonary tuberculosis, tuberculous pleural effusion and lung surgery for tuberculosis**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1971	**ACIR71000-B**	**Joint imaging with 99m-technetium pertechnetate**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1971	**ACIR71000-C**	**Placental imaging with 99m-technetium pertechnetate**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1971	**ACIR71000-D**	**Postoperative treatment of women with stage III ovarian cancer by radiotherapy or chlorambucil either alone or in both sequences**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1971	**ACIR71000-E**	**Sequential lung scanning of tuberculosis patients under treatment (I-131 and Xe-133)**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

ARMY 1944–1974 (CONTINUED)

Fitzsimons Army Medical Center, Aurora, CO (continued)

Start Date	Number	Title
1971	**ACIR71000-F**	**Diagnosis of functioning metastasis from thyroid carcinoma with 131-I and scintillation camera**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1973	**ACIR73000-G**	**Scintigraphic evaluation of thyroid disorders—clinical evaluation of oral 123-I sodium iodide**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**ACIR74000-C**	**Radiologic identification of common cardiac prosthetic valves and their associated complications, FAMC 74/105**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**ACIR74000-J**	**Use of indium-111 DTPA for the study of cerebrospinal fluid pathways**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**ACIR74000-V**	**Use of gallium-67 citrate in evaluation of patients with known or suspected tumors and pyogenic abscesses**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

ARMY 1944–1974 (CONTINUED)

Fort Lewis, WA

Start Date	Number	Title
1956	**RECC001**	**Food irradiation program**

(For abstract and documentation, see Army Medical Nutrition Laboratory, Denver, CO.)

Foster D. Snell, Inc., New York, NY

Start Date	Number	Title
1950	**CBDCOM002**	**Removal of radioactive contaminants from skin**

Abstract: From 1950 to 1953, researchers from Foster D. Snell, Inc., in New York, NY, with the support of the Army Chemical Corps, evaluated the ability of several soaps and detergents to radiologically decontaminate soldiers. One hundred eighteen healthy adults participated. Human testing was approved by the Atomic Energy Commission. An area on the outer side of each forearm was shaved. Wax pencil was applied to these spots and to the palms of the hands. Contaminants used were solids from Nevada testing grounds, carbon-labeled synthetic soil, neutron-irradiated synthetic soil, and fission product synthetic soil. Each contaminant was suspended in alcohol and applied to the wax-covered skin areas. Counts were taken with Geiger tube before and after washing. The efficiency of decontamination was calculated by determining the percentage of contamination removed.

Documents:

Author: Foster D. Snell, Inc., Consulting Chemists and Engineers. Title: First Quarterly Progress Report to the US Army Chemical Corps, Chemical and Radiological Laboratories, Army Chemical Center, on Removal of Radioactive Contaminants from Skin, Contract Number DA18-108-CML-2597, Order Number 1-13034. Document Type: Report. Date: 28 September 1951

Author: Foster D. Snell, Inc., Consulting Chemists and Engineers. Title: Second Quarterly Progress Report to the US Army Chemical Corps, Chemical and Radiological Laboratories, Army Chemical Center, on Removal of Radioactive Contaminants from Skin, Contract Number DA18-108-CML-2597, Order Number 1-13034. Document Type: Report. Date: 31 December 1951

Author: Foster D. Snell, Inc. Title: Third Quarterly Progress Report to the US Army Chemical Corps, Chemical and Radiological Laboratories, Army Chemical Center, on Removal of Contaminants from Skin, Contract Number DA18-108-CML-1-13034. Document Type: Report. Date: 31 March 1952

Author: Foster D. Snell, Inc., Consulting Chemists Engineers. Title: Final Report to US Army Chemical Corps, Chemical and Radiological Laboratories, on Removal of Radioactive Contaminants from Skin, Contract Number DA18-108-CML-2597, Order Number 1-13034. Document Type: Report. Date: 30 June 1952

Author: Foster D. Snell, Inc., Consulting Chemists and Engineers. Title: Interim Report to the US Army Chemical Corps, Chemical and Radiological Laboratories, on Removal of Radioactive Contaminants from Skin, Contract Number DA18-108-CML-4747. Document Type: Report. Date: 31 December 1952

Author: Foster D. Snell, Inc., Consulting Chemists Engineers. Title: Final Report to U. S. Army Chemical Corps, Chemical and Radiological Laboratories, on Removal of Radioactive Contaminants from Human Skin under Contract No. DA 18-108-CML-4747. Document Type: Report. Date: 15 June 1953

ARMY 1944–1974 (CONTINUED)

Hahnneman Medical College, Philadelphia, PA

Start Date	Number	Title
1969	**MRDC020**	**Clinical pharmacology of prophylactic and/or therapeutic compounds in volunteer subjects**

Abstract: From 1969 to 1970, researchers from Hahnneman Medical College and the Hospital of Philadelphia, PA, studied the effects of pralidoxime chloride (2-PAM Cl) and P_2S on whole blood oxime levels. Researchers administered 2-PAM Cl and P_2S in hard gelatin capsules to two volunteer groups; one older aged, one younger aged. The ten participants were fasting at the time they ingested the capsules. Blood samples were taken to determine whole blood oxime levels. Intravenous doses of 2-PAM Cl were also given to establish the hypertensive (high blood pressure) dose for each person. Significant differences in whole blood oxime levels were not apparent. Seven participants were administered tritiatied 2-PAM Cl. The final material administered had a specific activity of approximately 0.124 microcurie per milligram. Each participant received approximately thirteen microcuries. Additionally, two participants each received a single 500 milligram oral administration of 2-PAM Cl in hard gelatin capsules containing 250 milligrams radioactive carbon-14 (C-14). The C-14 label had a specific radioactivity of 0.0647 microcurie per milligram. Each subject received approximately 16.2 microcuries. There was no evidence that 2-PAM Cl underwent a metabolic degradation when healthy volunteers took it in capsule form. A measurement of the plasma half-life of oxime showed that commonly used medications did not appear to alter the absorption, metabolism, and excretion of 2-PAM Cl in the younger group of volunteers. The increase in blood pressure produced by intravenous doses of 2-PAM Cl and P_2S appeared to be partially antagonized by the oral or intravenous administration of nerve fiber blocking agents.

Documents:

Authors: Benjamin Calesnick, M.D.; Joseph R. DiPalma, M.D. Title: Unclassified Report No. 7, Clinical Pharmacology of Prophylactic and/or Therapeutic Compounds in Volunteer Subjects, Quarterly Progress Report, Contract No. DAAA15-69-C-0295. Document Type: Report. Date: 6 April 1969

Authors: Benjamin Calesnick, M.D.; Joseph R. DiPalma, M.D. Title: Unclassified Report No. 8, Clinical Pharmacology of Prophylactic and/or Therapeutic Compounds in Volunteer Subjects, Quarterly Progress Report, Contract No. DAAA15-69-C-0295. Document Type: Report. Date: 6 July 1969

Authors: Benjamin Calesnick, M.D.; Joseph R. DiPalma, M.D. Title: Clinical Pharmacology of Prophylactic and/or Therapeutic Compounds in Volunteer Subjects. Document Type: Report. Date: 1969 est.

Authors: Benjamin Calesnick, M.D.; Joseph R. DiPalma, M.D. Title: Report No. 10, Clinical Pharmacology of Prophylactic and/or Therapeutic Compounds in Volunteer Subjects, Final Comprehensive Report (January 1969 through April 1970), Contract No. DAAA15-69-C-0295. Document Type: Report. Date: 6 April 1970

Hospital of Philadelphia, Philadelphia, PA

Start Date	Number	Title
1969	**MRDC020**	**Clinical pharmacology of prophylactic and/or therapeutic compounds in volunteer subjects**

(For abstract and documentation, see Hahnneman Medical College, Philadelphia, PA.)

ARMY 1944–1974 (CONTINUED)

Ladd AFB, AK

Start Date	Number	Title
1955	**MRDC017**	**Thyroid activity in men exposed to cold**

(For abstract and documentation, see Air Force, Ladd AFB, AK, Number AF0011.)

Letterman Army Medical Center, San Francisco, CA

Start Date	Number	Title
1956	**RECC001**	**Food irradiation program**

(For abstract and documentation, see Army Medical Nutrition Laboratory, Denver, CO.)

Start Date	Number	Title
1973	**ACIR73000-H**	**Clinical evaluation of cisternography utilizing 111-indium DTPA (1973)**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1973	**ACIR73000-L**	**Clinical evaluation of 123-I sodium iodide**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**ACIR74000-AB**	**Clinical evaluation of cisternography utilizing 111-indium DTPA**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**ACIR74000-K**	**Clinical evaluation of renal cortical imaging utilizing 99m-Tc-kidney scintigraphin—(2, 3-dimercaptosuccinic acid)**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

ARMY 1944–1974 (CONTINUED)

Letterman Army Medical Center, San Francisco, CA (continued)

Start Date	Number	Title
1974	**ACIR74000-Q**	**Phase I study of ICRF-159 (NSC 129943) given orally plus radiation therapy for the treatment of bronchogenic carcinoma**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Madigan Army Medical Center, Tacoma, WA

Start Date	Number	Title
1972	**ACIR72000-R**	**Clinical trial of radiotherapy and chemotherapy (cyclophosphamide, vincristine, and acto dactinomycin) in managing non-metastatic Ewing's sarcoma, SWOG 7299**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**ACIR74000-E**	**Radiotherapy, CCNU, and procarbazine in malignant gliomas of the brain, SWOG 7404**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**ACIR74000-P**	**Technetium-99 macroaggregate**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**ACIR74999-A**	**Chromosome changes after diagnostic radioactive iodine tests**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

ARMY 1944–1974 (CONTINUED)

Madigan Army Medical Center, Tacoma, WA (continued)

Start Date	Number	Title
1974	**ACIR74999-B**	**Determination of normal range for 6-hour radioactive iodine uptake using I-123 iodine in order to eliminate need for 24-hour RAIU**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**ACIR74999-C**	**Development of radionuclide angiocardiography as a clinical diagnostic tool for the quantification of left to right cardiopulmonary shunts**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**ACIR74999-D**	**Tc-m-AA for lung scanning**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**ACIR74999-E**	**Use of emergency RISA studies on third trimester bleeding**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**ACIR74999-F**	**Western oncology group: hydroxyurea + radiation + 2nd look craniotomy in brain tumors**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

ARMY 1944–1974 (CONTINUED)

Madigan Army Medical Center, Tacoma, WA (continued)

Start Date	Number	Title
1974	**ACIR74999-G**	**Western oncology group: preoperative hydroxyurea + radiation in osteosarcoma**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Marine Corps Installation, Okinawa, Japan

Start Date	Number	Title
1956	**RECC001**	**Food irradiation program**

(For abstract and documentation, see Army Medical Nutrition Laboratory, Denver, CO.)

Marshall Islands

Start Date	Number	Title
1954	**MRDC030**	**Determination of internally deposited radioactive isotope in the Marshallese people by excretion analysis**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Medical College of Virginia, Richmond, VA

Start Date	Number	Title
1949	**RECC004**	**Medical College of Virginia burn studies**

Abstract: From 1949 to 1950, researchers from the Medical College of Virginia in Richmond, VA, investigated thermal and radiation injuries. Over the course of the study, approximately 100 burn patients and sixty-four healthy staff members participated. Approximately seven of the 100 severely burned patients received nitrogen-15 tagged blood products; an undetermined number of severely burned patients received chromium-51 tagged red blood cells and phosphorus-32 tagged blood products. In a separate part of the study, forty-four caucasian and twenty African-

ARMY 1944–1974 (CONTINUED)

Medical College of Virginia, Richmond, VA (continued)

American staff members of the Medical College participated in flash burn simulations. No radiation was used on the participants of this aspect of the study. This study resulted in the development of the Evan's Formula for estimation of fluid requirements following thermal injury and a universal dressing for burns. The syndrome of pseudodiabetes of stress was described. The effects of burn injury plus total body radiation were defined. Comprehensive studies showed the cause of anemia in thermal burns. Light energy required to produce different depths of flash burn was characterized. Observations on the adrenocortical response to thermal injury characterized a syndrome of adreno-medullary insufficiency.

Documents:

From: Everett I. Evans, M.D. To: Dr. John Z. Bowers. Subject: Human Use of No More Than 500 Microcuries of P32 on One Patient Within a Six Month Time Period. Document Type: Letter. Date: 8 April 1948

Author: Everett I. Evans, Ph.D., M.D. Title: Physical Agents and Trauma, Shock and Burns. Journal: *Annual Review of Medicine*, vol.1. Document Type: Journal Article. Date: 1950

Authors: Everett I. Evans, Ph.D., M.D.; W. J. H. Butterfield, B.M. (Oxon.), M.R.C.P. Title: The Stress Response in the Severely Burned. Journal: *Annals of Surgery*, vol. 134, issue 4. Document Type: Journal Article. Date: October 1951

Author: Everett I. Evans, Ph.D., M.D. Title: Treatment of High Intensity Burns. Journal: *AMA Archives of Surgery*, vol. 62. Document Type: Journal Article. Date: 1951

From: W. J . H. Butterfield. To: Professor Everett I. Evans. Subject: Memorandum on Observations on Volunteers from Penitentiary. Document Type: Memorandum. Date: 1951 est.

Authors: Everett I. Evans, Ph.D., M.D.; W. J. H. Butterfield, M.D.; Ardis M. Williams, M.S. Title: Effect of Adrenocorticotropic Hormone on the Survival of Homografts. Journal: *The Lancet*, vol. 1, issue 14. Document Type: Journal Article. Date: 5 April 1952

Authors: Mary M. Martin, M.D.; Everett I. Evans, Ph.D., M.D. Title: The Treatment of Acute Burns. Journal: *The Medical Clinics of North America.* Document Type: Journal Article. Date: 16 July 1953

Authors: James W. Brooks, M.D.; Everett I. Evans, Ph.D., M.D. Title: Experimental Production of Flash Burns. Journal: *Surgery*, vol. 36, issue 6. Document Type: Journal Article. Date: December 1954

Authors: Everett I. Evans, Ph.D., M.D.; Mary M. Martin, M.D. Title: The Successful Use of Dextran in the Treatment and Prevention of Shock in the Burned Patient. Journal: *Surgical Forum.* Document Type: Journal Article. Date: 1954 est.

Authors: Everett I. Evans, Ph.D., M.D.; James W. Brooks, M.D.; Frederick H. Schmidt, M.S.; Ray C. Williams; William T. Ham, Jr., Ph.D. Title: Flash Burn Studies on Human Volunteers. Journal: *Surgery*, vol. 37, issue 2. Document Type: Journal Article. Date: February 1955

Authors: B. W. Haynes, Jr., Maj., M.C.; Mary M. Martin, M.D.; Oliver J. Purnell, M.D. Title: Fluid Colloid and Electrolyte Requirements in Severe Burns. Journal: *Annals of Surgery*, vol. 142, issue 4. Document Type: Journal Article. Date: October 1955

Authors: James W. Brooks, M.D.; Frederick H. Schmidt, M.D.; Ray O.Williams; William T. Ham, Jr., Ph.D. Title: Effect of Skin Pigmentation on Flash Burns in Human Volunteers. Journal: *Surgical Forum.* Document Type: Journal Article. Date: 1955 est.

Authors: James W. Brooks, M.D.; B. W. Haynes, Jr., M.D.; W. T. Ham, Jr., Ph.D.; Fred Schmidt, M.S.; Ray Williams. Title: A Comparison of Local and Systemic Effects Following Contact and Flash Burns. Journal: *Annals of Surgery*, vol. 144, issue 4. Document Type: Journal Article. Date: October 1956

ARMY 1944–1974 (CONTINUED)

Medical College of Virginia, Richmond, VA (continued)

Authors: M. C. Goodall; C. Stone; B. W. Haynes, Jr. Title: Urinary Output of Adrenaline and Noradrenaline in Severe Thermal Burns. Journal: *Annals of Surgery*, vol. 145, issue 4. Document Type: Journal Article. Date: April 1957

Authors: James W. Brooks, M.D.; Everett I. Evans, Ph.D., M.D.; William T. Ham, Jr., Ph.D.; J. Douglas Reid, Ph.D. Title: The Influence of External Radiation on Mortality from Thermal Burns. Journal: *Annals of Surgery*, vol. 136, issue 3. Document Type: Journal Article. Date: September 1952

Philadelphia County Prison at Holmesburg, Philadelphia, PA

Start Date	Number	Title
1964	**MRDC024**	**Threshold doses in humans**

Abstract: From 1964 to 1967, researchers from the University of Pennsylvania in Philadelphia, PA, investigated the minimum required exposure to a substance resulting in a measurable response. The sensitizing effects of nitrogen mustard to obtain predictable responses to nitrogen mustard concentrations, effects of nitrogen mustard on surface area and body regions, and the effects of repeated exposures were also investigated. Twenty healthy prisoners at the Philadelphia County Prison at Holmesburg participated as paid volunteers. Participants underwent physical exams, including chest x-rays, and psychological evaluations before the study. Methods of skin protection from various agents were tested. Results of this study are unavailable at this time.

Documents:

Title: Threshold Doses in Humans [includes patient rights checklist, estimated costs, procurement checklist, and security checklist]. Document Type: Contract. Date: 11 October 1963

From: E. G. Scott, Chief, Law Division. To: Chief, Research and Development Division, D/Procurement. Subject: Threshold Doses in Humans. Document Type: Memorandum. Date: 15 November 1963

Authors: Albert M. Kligman, M.D., Ph.D., Principal Investigator; I. S. Ravdin, Vice-President for Medical Affairs. Title: US Army Edgewood Arsenal, Research and Development Contract, Proposal for Services in Connection with Contract RFP AMC(A)-18-035-64-88, Threshold Dose in Humans. Document Type: Proposal. Date: January 1964

Authors: L. A. Walker. Title: Contract, DA18-035-AMC-126(A), Threshold Doses in Humans. Document Type: Contract. Date: 31 March 1964

From: L. A. Walker, Contracting Officer. To: Record. Subject: Performance of Contract DA-18-035-AMC-126(A), University of Pennsylvania. Document Type: Memorandum. Date: 31 December 1964

Authors: Albert M. Kligman, M.D., University of Pennsylvania. Title: Holmesburg Prison Monthly Report, Covering April and May, 1964 [includes transmittal letter]. Document Type: Report. Date: 1964

Title: Test Data from Holmesburg [includes vital signs and other medical data]. Document Type: Log. Date: 1964–1965

Authors: L. A. Walker. Title: Contract Modification, DA18-035-AMC-126(A), Threshold Doses in Humans [includes modifications]. Document Type: Contract. Date: 3 June 1965

From: Capt. Arthur H. Hayes, Jr., MC, Contract Project Officer. To: M. Royston, Publications Writer. Subject: Contract Reports, Contract No. DA-18-035-AMC-126(A). Document Type: Memorandum. Date: 21 November 1966

ARMY 1944–1974 (CONTINUED)

Philadelphia County Prison at Holmesburg, Philadelphia, PA (continued)

Authors: Lt. Col. N. G. Bottiglieri, Chief, Medical Research Laboratory, et al. Title: Research Laboratories, US Army Edgewood Arsenal, Research Plan Number–17088, Minimal Effective Dose of CAR302,668 in Man by the Intravenous Route. Document Type: Proposal. Date: 20 July 1967

Title: Protocol and Procedural Guide for Threshold Effect Studies [includes experimental data sheet forms]. Document Type: Form; Protocol. Date: 1967 est.

Republic of Korea

Start Date	Number	Title:
Unknown	**MRDC-008**	**Study of blood volumes in soldiers sustaining injury and requiring transfusion**

Abstract: From a presently undetermined date until 1954, researchers from the Army Medical Service Graduate School evaluated the clinical status of patients entering the hospital and receiving blood transfusions after battle injury during the Korean conflict. It was thought that more could be learned about the adequacy of transfusion and its effect in maintaining blood volume throughout resuscitation and surgery. Fifty-three patients and five healthy individuals (for normal controls) participated. Each participant received red blood cells labeled with 150–200 microcuries of chromium-51 for determinations of blood volume. The dye T-1824 was also used for comparative plasma and blood volume determinations. When simultaneous blood volumes were determined with the labeled cells and the dye, the difference between the two was sixteen percent. Researchers concluded that when large amounts of blood were transfused and only a small blood volume increase was observed, the effect was greatest due to continued loss of blood either externally or into the tissues during the preoperative, operative, and postoperative periods.

Documents: Authors: Capt. Theodore C. Prentice, M.D., et al. Title: Studies of Blood Volume and Transfusion Therapy in the Korean Battle Casualty. Journal: *Surgery, Gynecology and Obstetrics*, vol. 99, issue 5. Document Type: Journal Article. Date: November 1954

St. Louis University, St. Louis, MO

Start Date	Number	Title
1963	**MRDC019**	**Cardiovascular assessment kit**

Abstract: From 1963 to 1966, researchers from St. Louis University in St. Louis, MO, developed a method to measure cardiac output. To date no information is available on the number of study participants. Both healthy individuals and cardiac patients participated. Researchers injected radioiodine (I-131) labeled serum albumin and externally monitored the flow of radioactivity through the heart. Cardiac output was calculated based on the dilution of I-131. This method considerably reduced the radiation dose to the patient and the necessity of a surgical team to conduct the measurements.

Documents: From: F. N. Craig, Chief, Applied Physiology Branch, Directorate of Medical Research. To: Dr. Theodore Cooper, Director, Center for Cardiovascular Research, St. Louis University School of Medicine. Subject: Proposal Approval. Document Type: Letter. Date: 26 February 1963

ARMY 1944–1974 (CONTINUED)

St. Louis University, St. Louis, MO (continued)

From: F. N. Craig, Contract Project Officer, Directorate of Medical Research. To: Theodore Cooper, M.D., Ph.D., Director, Center for Cardiovascular Research, St. Louis University School of Medicine. Subject: Approval for Use of Human Subjects. Document Type: Letter. Date: 2 July 1963

From: Theodore Cooper, M.D., Ph.D. To: Dr. F. N. Craig, Contract Project Officer, Directorate of Medical Research, US Army Chemical Research and Development Laboratories. Subject: Contract DA18-108-AMC-193(A). Document Type: Letter. Date: 12 July 1963

Author: F. N. Craig, Contract Project Officer. Title: Monthly Contract Project Officer Report for St. Louis University, July and August 1963. Document Type: Report. Date: 13 September 1963

Author: F. N. Craig, Contract Project Officer. Title: Monthly Contract Project Officer Report for St. Louis University, September 1963. Document Type: Report. Date: 14 October 1963

Author: F. N. Craig, Contract Project Officer. Title: Monthly Contract Project Officer Report for University of St. Louis (sic), October 1963. Document Type: Report. Date: 22 November 1963

Author: F. N. Craig, Contract Project Officer. Title: Monthly Contract Project Officer Report for University of St. Louis (sic), November 1963. Document Type: Report. Date: 26 December 1963

Author: F. N. Craig, Contract Project Officer. Title: Monthly Contract Project Officer Report, University of St. Louis (sic), December 1963. Document Type: Report. Date: 29 January 1964

Author: F. N. Craig, Contract Project Officer, Directorate of Medical Research. Title: Monthly Contract Project Officer Report for St. Louis University, January, February, and March 1964. Document Type: Report. Date: 2 April 1964

Author: F. N. Craig, Contract Project Officer. Title: Monthly Contract Project Officer Report for St. Louis University, April 1964. Document Type: Report. Date: 1 May 1964

Author: F. N. Craig, Contract Project Officer. Title: Monthly Contract Project Officer Report for St. Louis University, May 1964. Document Type: Report. Date: 28 May 1964

From: F. N. Craig, Contract Project Officer, Directorate of Medical Research. To: Dr. Theodore Cooper, Director, Center for Cardiovascular Research, St. Louis University School of Medicine. Subject: Receipt of Annual Comprehensive Report for Contract No. DA18-108-AMC-193(A). Document Type: Letter. Date: 25 June 1964

Author: F. N. Craig, Contract Project Officer, Directorate of Medical Research. Title: Monthly Contract Project Officer Report for St. Louis University, June 1964. Document Type: Report. Date: 1 July 1964

Author: F. N. Craig, Contract Project Officer. Title: Monthly Contract Project Officer Report for St. Louis University, July 1964. Document Type: Report. Date: 5 August 1964

Author: F. N. Craig, Contract Project Officer. Title: Monthly Contract Project Officer Report for St. Louis University, August 1964. Document Type: Report. Date: 17 September 1964

From: F. N. Craig, Contract Project Officer, Directorate of Medical Research. To: Dr. Theodore Cooper, Director, Center for Cardiovascular Research, St. Louis University School of Medicine. Subject: Request for Extension of Contract No. DA18-108-AMC-193(A). Document Type: Letter. Date: 10 February 1965

Author: Francis N. Craig. Title: Monthly Contract Project Officer Report for May 1965. Document Type: Report. Date: 15 June 1965

From: R. E. Erdmann, Contract Specialist. To: Dr. Francis N. Craig, CPO, Phys D, CRDL. Subject: Request for Closing Information Contract No. DA 18-108-AMC-193(A) St. Louis University [also includes reply from Craig to Erdmann]. Document Type: Memorandum; Form. Date: 1 October 1965

ARMY 1944–1974 (CONTINUED)

St. Louis University, St. Louis, MO (continued)

From: Francis N. Craig, Ph.D., Applied Physiology Br. To: Chief, Medical Research Lab. Subject: Further Evaluation of Research Contract No. DA18-108-AMC-193(A), St. Louis University. Document Type: Form. Date: 8 August 1966

Author: Francis N. Craig, Ph.D., Contract Project Officer, Physiology Department. Title: Evaluation Report of Research Contract No. DA 18-108-AMC-193(A). Document Type: Report. Date: 1966 est.

Strong Memorial Hospital, Rochester, NY

Start Date	Number	Title
1958	**MRDC021**	**Fate of atropine in man**

(For abstract and documentation, see Army Chemical Research and Development Laboratories, Army Chemical Center, Edgewood, MD.)

Tripler Army Medical Center, Honolulu, HI

Start Date	Number	Title
1973	**ACIR73000-K**	**Use of gallium-67 citrate for tumor scanning (1973)**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1973	**ACIR73000-S**	**Use of gallium-67 citrate for tumor scanning**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Tulane University, New Orleans, LA

Start Date	Number	Title
Unknown	**RECC002**	**Biological decay rates of chloride in normal and diseased man, determined with long-life radiochloride, Cl-36**

(For abstract and documentation, see Charity Hospital, New Orleans, LA.)

ARMY 1944–1974 (CONTINUED)

Tulane University, New Orleans, LA (continued)

Start Date	Number	Title
Unknown	**RECC003**	**Urinary excretion and biological decay periods of radiomercury labeling a mercurial diuretic in normal and diseased man**

(For abstract and documentation, see Charity Hospital, New Orleans, LA.)

University of Pennsylvania, Philadelphia, PA

Start Date	Number	Title
1964	**MRDC024**	**Threshold doses in humans**

(For abstract and documentation, see Philadelphia County Prison at Holmesburg, Philadelphia, PA.)

Walter Reed Army Hospital/Medical Center, Washington, DC

Start Date	Number	Title
1962	**MRDC029**	**Annual progress report, Department of Biophysics, Division of Nuclear Medicine and Chemistry, Walter Reed Army Institute of Research, Washington D.C.**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1966	**ACIR66000-A**	**Intensive radiotherapy: chemotherapy study of generalized Hodgkin's disease, CALGB 6604**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1970	**ACIR70000-B**	**Postoperative treatment of women with resectable ovarian cancer with radiotherapy, chlorambucil or no further treatment**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

ARMY 1944–1974 (CONTINUED)

Walter Reed Army Hospital/Medical Center, Washington, DC (continued)

Start Date	Number	Title
1970	**ACIR70000-D**	**Treatment of women with advanced cervical cancer confined to the pelvis with hydroxyurea or placebo both in combination with radiation**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1970	**ACIR70000-E**	**Request to evaluate Cleocin (7-chloro-7-deoxylincomycin) tissue levels in bone and irradiated bone**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1971	**ACIR71000-A**	**Radiotherapy of localized and regionally advanced nodal and extra-nodal malignant lymphoreticular tumors and intensive radiotherapy and chemotherapy of nodular lymphomas**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1971	**ACIR71000-G**	**Comparison of radiation therapy plus chemotherapy in localized bronchogenic carcinoma, WRAMC 7103**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1972	**ACIR72000-A**	**Gallium-67 citrate scans in detection of extent of testicular tumors**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

ARMY 1944–1974 (CONTINUED)

Walter Reed Army Hospital/Medical Center, Washington, DC (continued)

Start Date	Number	Title
1972	ACIR72000-B	**Gallium-67 citrate in the differentiation of cold nodules found in the liver scan**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1972	ACIR72000-C	**Gallium-67 citrate in the differentiation of cold nodules found in the thyroid scan**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1972	ACIR72000-D	**Increasing technetium-99m sulfur colloid uptake in bone marrow**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1972	ACIR72000-E	**Technetium-99m polyphosphate for bone imaging**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1972	ACIR72000-F	**Technetium-99m polyphosphate complexes as potential organ imaging and tumor localizing agents**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

ARMY 1944–1974 (CONTINUED)

Walter Reed Army Hospital/Medical Center, Washington, DC (continued)

Start Date	Number	Title
1972	**ACIR72000-G**	**Production of iodine-123**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1972	**ACIR72000-H**	**Study of the use of gallium-67 citrate in the staging of Hodgkin's disease**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1972	**ACIR72000-I**	**Intergroup rhabdomyosarcoma study: role of postoperative radiotherapy and combinations of dactinomycin, vincristine, cyclophosphamide, and Adriamycin in childhood, CALGB 7291 rhabdomyosarcoma**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1972	**ACIR72000-J**	**Intergroup Ewing's sarcoma study. Clinical trial of radiotherapy and chemotherapy in managing non-metastatic Ewing's sarcoma, CALGB 7299**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1972	**ACIR72000-P**	**Study of the use of gallium-67 citrate to localize lymphomas, WRAMC 7108**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

ARMY 1944–1974 (CONTINUED)

Walter Reed Army Hospital/Medical Center, Washington, DC (continued)

Start Date	Number	Title
1972	**ACIR72000-Q**	**Clinical evaluation of postoperative radiotherapy and drug combination in the treatment of childhood rhabdomyosarcoma, CALGB 7291**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1972	**ACIR72000-S**	**Clinical use of technetium-99m polyphosphate**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1972	**ACIR72000-T**	**Technetium-99m stannous polyphosphate in the diagnosis of bone disease in patients**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1973	**ACIR73000-A**	**Study of 99m-Tc sulfide colloid as an agent for radioisotope lymphography**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1973	**ACIR73000-B**	**Comparison of the use of radioactive phosphorus and radio-iodinated chloroquine in the diagnosis of melanoma tumors of the eye**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

ARMY 1944–1974 (CONTINUED)

Walter Reed Army Hospital/Medical Center, Washington, DC (continued)

Start Date	Number	Title
1973	**ACIR73000-D**	**Treatment of small cell carcinoma of lung: combination chemotherapy + radiation vs. single agent chemotherapy + radiation with and w/o prophylactic whole brain radiation. Comparison of cyclophosphamide + vincristine + methotrerate vs. cyclophosphamide, CALGB 7283**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1973	**ACIR73000-E**	**Clinical evaluation of fluorescence scanning of the thyroid with an americium-241 source (external source)**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1973	**ACIR73000-F**	**Gallium-67 citrate in the staging of carcinoma of the cervix**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1973	**ACIR73000-J**	**Clinical trial of radiotherapy and chemotherapy (cyclophosphamide, vincristine, and actinomycin-D) in managing non-metastatic Ewing's sarcoma, CALGB 7391**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1973	**ACIR73000-O**	**Investigational new drug indium-111 chloride for intravenous injection**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

ARMY 1944–1974 (CONTINUED)

Walter Reed Army Hospital/Medical Center, Washington, DC (continued)

Start Date	Number	Title
1973	**ACIR73000-P**	**Gallium-67 nitrate in diagnosis of soft tissue tumors**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**ACIR74000-A**	**Comparison of endoscopic and radiologic evaluation of the upper gastrointestinal tract**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**ACIR74000-AB**	**Clinical evaluation of cisternography utilizing 111-indium DTPA**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**ACIR74000-B**	**Combination chemotherapy in induction for standard risk and combination chemotherapy + cranial irradiation + daunorubicin for increased risk followed by maintenance w/ continuous vs. intermittent 6-MP + MTX + subsequent immunotherapy, CALGB 7411**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**ACIR74000-F**	**Protocol for adjuvant therapy of stage II testicular carcinoma with chemotherapy (actinomycin D + chlorambucil, radiation, or chemotherapy + radiation therapy after retroperitoneal lymph node dissection), WRAMC 7402**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

ARMY 1944–1974 (CONTINUED)

Walter Reed Army Hospital/Medical Center, Washington, DC (continued)

Start Date	Number	Title
1974	**ACIR74000-G**	**Effect of iodine and lithium on the release of thyroxine from the thyroid gland of patients with thyrotoxicosis**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**ACIR74000-H**	**Combination radiotherapy and chemotherapy of stage III Hodgkin's disease (phase III), CALGB 7451**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**ACIR74000-I**	**Investigational use of indium-111 DTPA**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**ACIR74000-M**	**Cobalt-57 bleomycin in tumor imaging**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**ACIR74000-R**	**Use of gallium-67 citrate for tumor scanning (1974)**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

ARMY 1944–1974 (CONTINUED)

Walter Reed Army Hospital/Medical Center, Washington, DC (continued)

Start Date	Number	Title
1974	**ACIR74000-S**	**Clinical evaluation of 111-indium bleomycin (MPI Tumor Scintigraphin™) which is presently in the third phase of investigation**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**ACIR74000-T**	**Clinical evaluation of thyroid by in vivo radionuclidic studies utilizing I-123**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**ACIR74000-U**	**Investigational use of indium-111 chloride**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**ACIR74000-V**	**Use of gallium-67 citrate in evaluation of patients with known or suspected tumors and pyogenic abscesses**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**ACIR74000-W**	**Use of indium-111 DTPA for study of cerebrospinal fluid pathways**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

ARMY 1944–1974 (CONTINUED)

Walter Reed Army Hospital/Medical Center, Washington, DC (continued)

Start Date	Number	Title
1974	**ACIR74000-X**	**Bone marrow scintigraphy and scintigraphic localization of soft tissue tumors by use of indium-111 chloride**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**ACIR74000-Y**	**Adjuvant therapy of stage II testicular carcinoma with chemotherapy, radiation therapy or chemotherapy plus radiation therapy**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**ACIR74000-Z**	**Investigational use of gallium-67 citrate**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Walter Reed Army Institute of Research, Washington, DC

Start Date	Number	Title
Unknown	**MRDC026**	**Gamma ray activity of reactor personnel as determined by the Walter Reed whole body counting facility**

Abstract: From a presently undetermined date until 1961, researchers from the Walter Reed Army Institute of Research in Washington, DC assessed the use of a whole-body counting device to obtain estimations of radioactivity in occupationally exposed people. The goal was to determine if these estimations could serve as a supplement to conventional methods of personnel monitoring. Researchers took eighty-eight body counts of sixty-four men assigned to the Army Package Reactor (APPR-1) at Fort Belvoir, VA. All men had an average of fourteen months of occupational exposure. Chemist-health physicists and reactor maintenance personnel were among those who were counted. Participants did not receive any additional radiation exposure by participating in this study. Analysis of 1,048 military personnel of approximately the same age, good health, and dietary intake and without histories of radioactive exposure was the standard of comparison for the results of this experiment. Forty-five percent of the study group was

ARMY 1944–1974 (CONTINUED)

Walter Reed Army Institute of Research, Washington, DC (continued)

uncontaminated at the time they were counted. Thirty percent of exposed personnel were contaminated with levels indistinguishable from normal. Twenty-five percent exhibited gamma ray activity clearly above the normal range, but still far below the maximum permissable body burdens and undetectable with conventional monitoring.

Documents: Title: Gamma Ray Activity of Reactor Personnel as Determined by the Walter Reed Whole Body Counting Facility. Document Type: Event Profile. Date: 1994

Start Date	Number	Title
Unknown	**MRDC027**	**Turnover of radioelements in clinical medicine**

Abstract: From a presently undetermined date until 1961, researchers at the Walter Reed Army Institute of Research in Washington, DC developed and compared tests for detecting radionuclides in whole body, urine, feces, and blood specimens. Ten patients and healthy volunteers participated. A four pi scintillation detector was used to count participants before administration of radioisotopes. Absorption from the gastrointestinal tract, urinary excretion, and residual retention showed that elimination of radioiodinated serum albumin from the body was normal. Intravenous doses were given to determine the total turnover rate of vitamin B-12 labeled cobalt-60 in leukemia patients. Whole body counting followed. A metabolism test was conducted with strontium-85 chloride. In a fourth trial, iron absorption was determined. Patients were given ferrous sulphate containing iron-59 after they fasted. The benefits of whole-body counting were use of lower doses of radioactivity than conventional tracer techniques, the possibility of longer patient follow-ups, short counting times, the replacement of tedious laboratory methods, and more dynamic results.

Documents: Title: Turnover of Radioelements in Clinical Medicine. Document Type: Event Profile. Date: 1994

Start Date	Number	Title
Unknown	**MRDC028**	**Quantitative cerebral blood flow determination**

Abstract: From a presently undetermined date until 1962, researchers at the Walter Reed Army Institute of Research in Washington, DC simplified the limitations of the krypton-85 saturation technique for measuring cerebral blood flow (CBF). Twenty-five healthy adult males participated. A basal metabolic rate (BMR) machine was used to administer krypton gas. Participants inhaled a krypton-oxygen (or krypton-air) mixture until their brains were saturated with krypton for a minimum of seven minutes. The amount of krypton concentration at the conclusion of saturation was measured from blood samples. Measurements were taken with a Geiger tube and standard scalar. Counts were plotted to determine the desaturation curve. The mean CBF was 56.5 cubic centimeters of blood per 100 grams of brain per minute. This desaturation technique minimized extracerebral contamination in CBF determination, eliminated the use of a face mask during CBF measurement, and simplified gas administration.

Documents: Author: Lawrence C. McHenry, Jr., M.D. Title: Quantitative Cerebral Blood Flow Determination. Document Type: Book; Excerpt. Date: 1963 est.

ARMY 1944–1974 (CONTINUED)

Western Reserve University, Cleveland, OH

Start Date	Number	Title
1961	**MRDC023**	**Nature of intradermal barrier to skin penetration**

Abstract: From 1961 to 1965, researchers from Western Reserve University in Cleveland, OH, studied the chemical and physiological characteristics of skin cells and inner skin barriers in response to permeation by various chemicals applied externally. Carbon-14 labeled fluocinolone acetonide was applied to the forearms of three normal, young, adult, male subjects. Results indicated that agents with high solubility in both ether and water were likely to penetrate the skin better than agents that have a low solubility in one of these solvents even if it has a high solubility in the other solvent.

Documents:

Title: Nature of Intradermal Barrier to Skin Penetration, Western Reserve University. Document Type: Contract. Date: 20 June 1958

Authors: Richard Stoughton; William Glendenning; Doris Hales. Title: Progress Report No. 3 on Percutaneous Absorption to Army Chemical Center, Edgewood, Maryland, Contract No. DA 18-108-405-CML-215. Document Type: Report. Date: 23 December 1958

Authors: Richard B. Stoughton, M.D.; William E. Glendenning, M.D. Title: [The Rate of Percutaneous Penetration of Certain Nicotinates in Humans]. Document Type: Report. Date: 1958 est.

Title: General Provisions for Contract DA 18-108-405-CML-215 Western Reserve University. Document Type: Contract. Date: 1958 est.

From: Col. J. A. Martin, Cml C, Commanding. To: Dr. Richard B. Stoughton, Director of Dermatology, Western Reserve University, University Hospitals of Cleveland. Subject: Granting of Permission to Use Human Volunteers in Contract DA-18-108-405-CML-215, to Establish the Rate of Percutaneous Penetration of Certain Nicotinates. Document Type: Letter. Date: 26 May 1959

Authors: Richard Stoughton; William Glendenning; Doris Hales. Title: Progress Report No. 2 on Percutaneous Absorption to Army Chemical Center, Edgewood, Maryland. Document Type: Report. Date: 29 June 1959

Authors: Richard Stoughton; A. W. McKenzie; Doris Hales. Title: Progress Report No. 5 on Percutaneous Absorption to Army Chemical Center, Edgewood, Maryland. Document Type: Report. Date: 1 July 1962

Author: Richard B. Stoughton, M.D., Department of Dermatology, Western Reserve University. Title: Progress Report No. 6 on Percutaneous Absorption to Army Chemical Center, Edgewood, Maryland. Document Type: Report. Date: 15 March 1963

Title: Measurements of Penetration or Retention of Liquid Compounds by Human Skin [includes cost schedule]. Document Type: Form. Date: August 1963

Author: Richard B. Stoughton, M.D. Title: Final Report on Percutaneous Absorption to Army Chemical Center, Edgewood, Maryland. Document Type: Report. Date: 16 December 1963

Title: Proposal of Future Work on Percutaneous Absorption [includes bibliography and budget]. Document Type: Proposal. Date: 1964

Title: Modification No. 1 to 17 Supplemental Agreement to Contract No.DA18-108-405-CML-215(A), DA18-108-CML-6575(A), and CP8-405-15196 [includes Article I to VII]. Document Type: Contract. Date: 31 May 1966

ARMY 1944–1974 (CONTINUED)

William Beaumont Army Medical Center, El Paso, TX

Start Date	Number	Title
1966	**ACIR66000-B**	**Parathyroid reserves in 131-I treated patients**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1969	**ACIR69000-C**	**Use of RISA blood volume determination to determine red cell volume**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1970	**ACIR70000-A**	**Mottling on the colloidal radiogold liver scan**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1972	**ACIR72000-M**	**Fluorine-18 on the diagnosis of bone disease**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1973	**ACIR73000-C**	**99m-Tc polyphosphate in the diagnosis of bone disease in patients**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1973	**ACIR73000-N**	**Use of technetium-99m polyphosphate in the diagnosis of bone disease**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

ARMY 1944–1974 (CONTINUED)

William Beaumont Army Medical Center, El Paso, TX (continued)

Start Date	Number	Title
1973	ACIR73000-Q	**Technetium-99m stannous polyphosphate in the diagnosis of bone disease in patients**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1973	ACIR73000-R	**Gallium-67 citrate in diagnosis of soft tissue tumors**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	ACIR74000-AC	**Blood pool imaging with indium-111 chloride**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	ACIR74000-L	**Gallium-67 citrate in the diagnosis of soft tissue tumors**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

DEFENSE SPECIAL WEAPONS AGENCY/ARMED FORCES RADIOBIOLOGY INSTITUTE 1944-1974

Armed Forces Radiobiology Research Institute, Bethesda, MD

Start Date	Number	Title
1973	**DNA09**	**Bone marrow transplantation**

Abstract: From 1973 to 1976, researchers at the National Naval Medical Center (NNMC) in Bethesda, MD, participated in a National Institute of Health (NIH) and National Cancer Institute (NCI) protocol for the treatment and cure of leukemia. Twenty-two cancer patients, both adults and children, participated in the study. Eleven participants came from the NNMC and eleven from NIH/NCI. Patients were treated for leukemia with cobalt-60 whole-body irradiation and subsequent bone marrow transplants. The physical irradiations were conducted at the Armed Forces Radiobiology Research Institute in Bethesda, MD. The medical evaluation and treatment took place at NNMC and NIH. Decreased rejection of the donor bone marrow by the patients was expected. Results of the study are not available at this time.

Documents:

Authors: Bone Marrow Transplantation Group, Experimental Hematology Section, Pediatric Oncology Branch, Medical Oncology, National Cancer Institute. Title: Allogeneic Bone Marrow Transplantation for Patients with Malignancy. Document Type: Report. Date: Unknown

Authors: Robert G. Graw, Jr., M.D.; Brigid G. Leventhal, M.D.; Ronald A. Yankee, M.D.; G. Nicholas Rogentine, Jr., M.D.; Edward S. Henderson, M.D. Title: Allogeneic Bone Marrow Transplantation of Patients with Leukemia. Document Type: Report. Date: 28 May 1970

From: Alfred S. Ketcham, M.D. To: Robert G. Grew, Jr., M.D. Subject: Total Body Irradiation of Patients for Bone Marrow Transplantation. Document Type: Memorandum. Date: 5 April 1972

Title: Report of the Ad Hoc Committee on Scientific Validity and Acceptability of Using Whole-Body Irradiation Prior to Bone Marrow Transplantation. Document Type: Report; Excerpt. Date: June 1972

From: D. L. Curtis, Commanding Officer, Naval Hospital, NNMC. To: Secretary of the Navy, via Commanding Officer, National Naval Medical Center, via Chief, Bureau of Medicine and Surgery. Subject: Protocol for Clinical Bone Marrow Transplantation; Submission for Approval [first endorsment]. Document Type: Memorandum. Date: 5 January 1973

From: Capt. Kenneth W. Sell, Chairman, Bone Marrow Transplantation Selection Committee. To: Secretary of the Navy. Subject: Protocol for Clinical Bone Marrow Transplantation; Submission for Approval. Document Type: Memorandum. Date: 8 January 1973

From: Commanding Officer, National Naval Medical Center, D. L. Curtis, Acting. To: Secretary of the Navy, via Chief, Bureau of Medicine and Surgery. Subject: Protocol for Clinical Bone Marrow Transplantation; Submission for Approval [second endorsment]. Document Type: Memorandum. Date: 9 January 1973

From: G. M. Davis, Chief, Bureau of Medicine and Surgery. To: Secretary of the Navy. Subject: Protocol for clinical bone marrow transplantation; submission for approval [third endorsment]. Document Type: Memorandum. Date: 15 January 1973

Start Date	Number	Title
1973	**DNA06**	**Comparison of isotopes for skeletal imaging in patients with metastatic disease**

Abstract: From 1973 to 1974, researchers at the Bowman Gray School of Medicine in Winston-Salem, NC, along with investigators at the Armed Forces Radiobiology Research Institute in Bethesda,

Armed Forces Radiobiology Research Institute, Bethesda, MD (continued)

MD, compared the use of technetium-99m (Tc-99m) versus strontium-85 (Sr-85) in detecting bone lesions. Seventy-five cancer patients were injected with both Tc-99 and Sr-85. Comparisons were made of the images resulting from the two different isotopes. Results showed that, for 20 percent of patients, a greater number of bone lesions were detected using Tc-99m. Tc-99m scans improved the ability of the doctors to see areas of abnormal new bone growth at an earlier stage than radiographs. Tc-99m was determined to be superior to Sr-95 as a bone scanning agent.

Documents: Authors: J. S. Stevenson; C. D. Maynard. Title: Comparison of Technetium-99m Polyphosphate and Strontium-85 for Skeletal Imaging in Patients with Metastatic Disease. Document Type: Report. Date: June 1973

Start Date	Number	Title
Unknown	**DNA07**	**Scintigraphy to detect early disease of the hip**

Abstract: From a presently undetermined date until 1974, researchers at the National Naval Medical Center in Bethesda, MD, studied the distribution, processing, and elimination of technetium-99m (Tc-99m). Ten adult male patients with hip injuries and a high probability of aseptic necrosis participated. Each patient was injected with Tc-99m two to three hours before scanning. Tc-99m detected necrotic changes earlier than standard x-ray examinations. With computer analysis, the rate of bone growth around necrotic areas could be calculated. Tc-99m was determined to be an effective method of detecting aseptic necrosis before radiographic changes.

Documents: Authors: J. S. Stevenson; F. R. Nelson; V. L. McManaman. Title: Technetium-99m Diphoshonate Scintigraphy to Detect Early Avascular Necrosis of the Hip. Document Type: Report. Date: July 1974

Baylor University College of Medicine, Houston, TX

Start Date	Number	Title
1952	**DNA02**	**Influence of total body irradiation**

(For further information, see Chapter 2—"Total-Body and Partial-Body Irradiation Studies.")

Documents: From: Col. H. C. Donnelly, Chief of Staff. To: The Surgeon General; Department of the Army. Subject: Request for Monitoring of Medical Radiation Effects Project at Baylor University College of Medicine. Document Type: Memorandum. Date: 2 December 1952

From: Col. J. R. Wood, M.C., Chief Research and Development. To: Dr. W. T. Gooch, Dean, Graduate School, Baylor University. Subject: Funds Required for Development of a Radioactive Isotope Gamma Ray Therapy Machine. Document Type: Memorandum. Date: 21 December 1952

Authors: R. Kenneth Loeffler; Vincent P. Collins; and George A. Hyman. Title: Comparative Effects of Total Body Radiation, Nitrogen Mustard, and Triethylene Melamine on the Hematopoietic System of Terminal Cancer Patients. Journal: *Science*, vol. 118, issue 3058. Document Type: Journal Article. Date: 7 August 1953

Authors: Vincent P. Collins, M.D.; R. Kenneth Loeffler, M.D. Title: A Study of the Effects of Total and Partial-Body Radiation on Iron Metabolism and Hematopoiesis. Document Type: Report. Date: 1 January 1954

DEFENSE SPECIAL WEAPONS AGENCY/ARMED FORCES RADIOBIOLOGY INSTITUTE 1944-1974 (CONTINUED)

Baylor University College of Medicine, Houston, TX (continued)

Authors: Vincent P. Collins, M.D.; R. Kenneth Loeffler, M.D. Title: The Therapeutic Use of Single Doses of Total Body Radiation. Journal: *The American Journal of Roentgenology Radium Therapy and Nuclear Medicine*, vol. 75, issue 3. Document Type: Journal Article. Date: March 1956

From: H. O. Beeth. To: The Surgeon General; Department of the Army. Subject: Funding of Study of the Effects of Total and Partial-Body Radiation on Iron Metabolism and Hematopoiesis. Document Type: Memorandum. Date: 15 August 1956

Authors: Vincent P. Collins, M.D.; R. Kenneth Loeffler, M.D. Title: The Therapeutic Use of Single Doses of Total Body Radiation. Document Type: Report. Date: 1956

Authors: Vincent P. Collins, M.D.; R. Kenneth Loeffler, M.D.; C.T. Teng, M.D. Title: A Study of the Effects of Total and Partial-Body Radiation on Iron Metabolism and Hematopoiesis. Document Type: Report. Date: 1956 est.

Author: D. A. Rappoport, Department of Radiology and Biochemistry, Baylor University College of Medicine. Title: The Influence of X-rays on the Kinetics of Erythrocyte Enzymes as a Biological Dosimeter. Progress Report for Period 1 February 1956 to 31 August 1956. Document Type: Report. Date: 1956 est.

Authors: Vincent P. Collins, M.D.; R. Kenneth Loeffler, M.D.; D. A. Rappoport, Ph.D.; C. T. Teng, M.D. Title: A Study of the Effects of Total and Partial-Body Radiation on Iron Metabolism and Hematopoiesis. Progress Report for Period 1 September 1955–31 January 1956. Document Type: Report. Date: 1956 est.

Author: Donald A. Rappoport. Title: The Influence of Total-Body X-Rays on the Kinetics of Erythrocyte Enzymes as a Biological Dosimeter, Report for Period 01 September 1956–31 May 1957. Document Type: Report. Date: 1957 est.

Authors: Vincent P. Collins, M.D.; C. T. Teng, M.D.; Walton D. West, M.Sc. Title: The Study of the Effects of Total and Partial-Body Irradiation on Iron Metabolism and Hematopoiesis. Progress Report for Period 01 September 1956 to 01 March 1957. Document Type: Report. Date: 1 March 1957

From: Col. R. L. Hullinghorst, MC, Chief of Research and Development Division; AFSWP. To: The Surgeon General; Department of the Army. Subject: Funding for the Study of the Effects of Total and Partial-Body Radiation on Iron Metabolism and Hematopoiesis. Document Type: Memorandum. Date: 19 July 1957

Author: Vincent P. Collins, M.D., Professor of Radiology, Baylor College of Medicine. Title: A Study of the Effects of Total and Partial-Body Radiation on Iron Metabolism and Hematopoiesis. Progress Report for Period 1 March 1957 to 1 September 1957. Document Type: Report. Date: 1957 est.

From: Lt. Col. Harold F. Hamit, MC, Chief, Surgical Research Branch, Research and Development Division. To: James D. McMurrey, M.D., Assistant Professor of Surgery, Baylor University College of Medicine. Subject: Effects of Chronic, Continuous Ionizing Radiation at Low Dosage Levels, Need for Research. Document Type: Letter. Date: 17 January 1958

Authors: Vincent P. Collins, M.D.; C. T. Teng, M.D.; Walton D. West, M.Sc. Title: The Study of the Effects of Total and Partial-Body Irradiation on Iron Metabolism and Hematopoiesis. Progress Report for Period 1 September 1957–28 February 1958 [includes charts]. Document Type: Report. Date: 13 March 1958

From: Lt. Col. Harold F. Hamit, MC, Chief, Surgical Research Branch, Research and Development Division. To: Dr. D. A. Rappoport, Assistant Professor, Department of Biochemistry, Baylor University. Subject: Response to Questions Concerning Research on Radiation and Thermal Burns. Document Type: Letter. Date: 27 May 1958

Authors: Vincent P. Collins, M.D.; C. T. Teng, M.D.; Walton D. West, M.Sc. Title: The Study of the Effects of Total and Partial-Body Irradiation on Iron Metabolism and Hematopoiesis. Progress Report for Period 1 March 1958–31 May 1958 [includes charts]. Document Type: Report. Date: 31 May 1958

From: Lt. Col. William W. Cox, MC, Chief, Medical Research Branch, Research and Development Division. To: Vincent P. Collins, M.D., Professor of Radiology, Chairman of the Department, Baylor University College of Medicine. Subject: Receipt of Application for Research Contract Entitled: A Study of the Effects of Total and Partial-Body Radiation on Iron Metabolism and Hematopoiesis. Document Type: Letter. Date: 23 June 1958

DEFENSE SPECIAL WEAPONS AGENCY/ARMED FORCES RADIOBIOLOGY INSTITUTE 1944-1974 (CONTINUED)

Baylor University College of Medicine, Houston, TX (continued)

From: Lt. Col. Arthur D. Sullivan, MSC, Research and Development Division. To: Donald A. Rappoport, M.D., Department of Biochemistry, Baylor University College of Medicine. Subject: Acknowledgment of Progress Report and Application for Renewal of Study: The Influence of Total-Body X-Radiation on the Kinetics of Erythrocyte Enzymes as a Biological Dosimeter, Contract No. DA-49-007-M.D.-428 [includes original forwarding memorandum]. Document Type: Letter. Date: 10 July 1958

From: Lt. Col. F. W. Timmerman, MC, Asst. Chief, Research and Development Division; Lt. Col. Arthur D. Sullivan, Biophysics Research Branch, Research and Development Division. To: Director, Walter Reed Army Institute of Research. Subject: Transmission of Research Proposal Renewal and Progress Report for Contract On: The Influences of Total-Body X-Radiation on the Kinetic of Erythrocyte Enzymes as a Biological Dosimeter, from Dr. D. A. Rappoport, Baylor University. Document Type: Memorandum. Date: 15 July 1958

From: Lt. Col. Bach. To: The Surgeon General; Department of the Army. Subject: Funding of Study of the Effects of Total and Partial-Body Radiation on Iron Metabolism and Hematopoiesis. Document Type: Memorandum. Date: 21 August 1958

Authors: Vincent P. Collins, M.D.; C. T. Teng, M.D.; Walton D. West, M.Sc. Title: The Study of the Effects of Total and Partial-body Irradiation on Iron Metabolism and Hematopoiesis. Progress Report for Period 1 June 1958–31 August 1958. [includes charts]. Document Type: Report. Date: 31 August 1958

Authors: Vincent P. Collins, M.D.; C. T. Teng, M.D.; Walton D. West, M.Sc. Title: The Study of the Effects of Total and Partial-Body Radiation on Iron Metabolism and Hematopoiesis. Progress Report for Period 1 September 1958–30 November 1958. Document Type: Report. Date: 30 November 1958

Authors: Vincent P. Collins, M.D.; C. T. Teng, M.D.; Walton D. West, M. Sc. Title: A Study of the Effects of Total and Partial-Body Radiation on Iron Metabolism and Hematopoiesis. Progress Report for Period 1 December 1958–31 August 1959. Document Type: Report. Date: 1959 est.

Authors: John M. Knox, M.D.; A. Clark Griffin, Ph.D.; Raouf E. Hakim, Ph.D.; Hugh D. Benett, M.D.; Harry L. Barton, M.D.; Vincent P. Collins, M.D.; Robert G Freeman, M.D. Title: Protection from Total-Body Irradiation. Journal: *Journal of the American Medical Association*, vol. 175, issue 11. Document Type: Journal Article. Date: 18 March 1961

Title: Nuclear Weapons Effects Research Semiannual Progress Summary, 01 October 1962. "The Effect of Total-Body Irradiation on Immunologic Tolerance of Bone Marrow and Homografts of Other Living Tissue." Document Type: Report. Date: 1 October 1962

Author: Vincent P. Collins, M.D. Title: The Effect of Total Body Irradiation on Immunologic Tolerance of Bone Marrow and Homografts of Other Living Tissue. Report for Period 1 February 1961–31 January 1962 [DTL 006 413]. Document Type: Report. Date: 1962 est.

Author: Vincent P. Collins, M.D. Title: The Effect of Total Body Irradiation on Immunologic Tolerance of Bone Marrow and Homografts of Other Living Tissue. Report for Period 1 February 1962–31 January 1963. Document Type: Report. Date: 1963 est.

Author: Vincent P. Collins, M.D. Title: The Effect of Total Body Irradiation on Immunologic Tolerance of Bone Marrow and Homografts of Other Living Tissue. Report for Period 1 February 1963–31 January 1964 (Final Report). Document Type: Report. Date: 1964 est.

Bowman Gray School of Medicine, Winston-Salem, NC

Start Date	Number	Title
1972	**DNA11**	**Basic principles of pancreatic scanning**

Abstract: From 1972 to 1973, researchers at the Bowman Gray School of Medicine in Winston-Salem, NC, assessed the effectiveness of routine pancreatic scanning in the diagnosis of carcinoma.

Bowman Gray School of Medicine, Winston-Salem, NC (continued)

Eighty cancer patients from North Carolina Baptist Hospital participated. Patients prepared for the experiment with a high-protein, low-fat, low-carbohydrate diet for three days before the study. After this three-day diet, patients fasted overnight. Patients who were not placed on diets did not fast. All patients were given a high-protein, low-fat, liquid meal thirty minutes before injection of 120 to 250 microcuries of selenmethionine-75 (Se-75). Following the injection, an Anger scintillation camera took images every ten minutes for one hour with the detector angled toward the patient's head and midline. The center of Anger camera's crystal was placed at the stomach. Ninety-six percent of patients with normal test results did not have pancreatic disease. Normal uptake of Se-75 in the pancreas appeared as a diffuse uniform pattern. While pancreatic scanning was not a reliable method of verifying malignancy, it was a useful procedure for determining normality. As a result of this experiment, pancreatic scanning was accepted as a simple cancer screening procedure.

Documents: Authors: J. S. Stevenson; C. D. Maynard. Title: Basic Principles of Pancreatic Scanning. Document Type: Report. Date: August 1973

Start Date	Number	Title
1973	**DNA06**	**Comparison of isotopes for skeletal imaging in patients with metastatic disease**

(For abstract and documentation, see Armed Forces Radiobiology Research Institute, Bethesda, MD.)

Cincinnati General Hospital, Cincinnati, OH

Start Date	Number	Title
1961	**DNA03**	**Radiation effects in man**

(For further information, see Chapter 2—"Total-Body and Partial-Body Irradiation Studies.")

Documents: Author: Eugene L. Saenger, M.D., Associate Clinical Professor of Radiology [University of Cincinnati]. Title: Application for Research Contract—Parts 1–4, Metabolic Changes in Humans Following Total Body Radiation. Document Type: Proposal. Date: 25 September 1958

From: Lt. Col. James B. Hartgering, MC, Director, Division of Nuclear Medicine and Chemistry. To: US Army Medical Research and Development Command, Attn.: Lt. Col. A. D. Sullivan. Subject: Application for Research Contract [regarding Dr. Saenger's proposed total body irradiation program]. Document Type: Memorandum. Date: 25 September 1958

From: Col. Clinton S. Maupin, MC, Special Assistant for Nuclear Energy, OTSG. To: Deputy Commander, USA Medical Research and Development Command. Subject: Application for Research Contract (Approval Memorandum). Document Type: Memorandum. Date: 24 October 1958

From: Lt. Col. Arthur D. Sullivan, MSC, Asst. Chief, Biophysics and Astronautics Research Branch, USA Medical Research and Development Command. To: [John A. Isherwood] Chief, Radiological Service, Walter Reed Army Medical Center. Subject: Application for Research Contract [includes approval memorandum from John A. Isherwood, Chief, Radiological Service, Walter Reed Army Medical Center, 22 October 1958]. Document Type: Memorandum. Date: 24 October 1958

DEFENSE SPECIAL WEAPONS AGENCY/ARMED FORCES RADIOBIOLOGY INSTITUTE 1944-1974 (CONTINUED)

Cincinnati General Hospital, Cincinnati, OH (continued)

From: Lt. Col. William W. Cox, MC, Chief, Medical Research Branch. To: Col. Sullivan. Subject: Application for Research Contract, Metabolic Changes in Humans Following Total Body Radiation, Submitted by Eugene L. Saenger, M.D., College of Medicine at University of Cincinnati (Approval Memorandum). Document Type: Memorandum. Date: 3 November 1958

From: Lt. Col. James B. Hartgering, MC, Director, Division of Nuclear Medicine and Chemistry. To: Lt. Col. A. D. Sullivan, USA Medical Research and Development Command. Subject: Application for Research Contract (Approval Memorandum). Document Type: Memorandum. Date: 7 November 1958

From: Lt. Col. Arthur D. Sullivan, MSC, Asst. Chief, Biophysics & Astronautics Research Branch. To: Col. Hullinghorst. Subject: Application for Research Contract, Metabolic Changes in Humans Following Total Body Radiation, Submitted by Eugene L. Saenger, M.D., College of Medicine at University of Cincinnati. Document Type: Memorandum. Date: 12 November 1958

From: Eugene L. Saenger, M.D., Radioisotope Laboratory, Cincinnati General Hospital, University of Cincinnati College of Medicine. To: Lt. Col. Arthur D. Sullivan, Biophysics Research Branch, Research and Development Division, OSG. Subject: [refers to additional studies to be carried out in conjunction with the studies proposed in the contract at no additional expense to the program]. Document Type: Letter. Date: 4 December 1958

From: David Lambert, Capt., USN, Deputy Chief of Staff, Weapons Effects and Tests. To: Director of Logistics, Attn.: Chief, Contract Management Branch [through: Chief, DASA Chief of Staff, DASA Comptroller]. Subject: Negotiation of Contract [Saenger TBI Studies]. Document Type: Memorandum; Contract. Date: 29 October 1959

From: Capt. David Lambert, USN, Deputy Chief of Staff, Weapons Effects and Tests. To: Director of Logistics, Attn: Chief, Contract Management Branch. Subject: Negotiation of Contract (refers to research proposal entitled: Metabolic Changes in Humans Following Total Body Radiation]. Document Type: Memorandum. Date: 29 October 1959

Author: Defense Atomic Support Agency. Title: Contract No. DA-49-146-XZ-029. Contract for: Research Relating to Study the Phenomenon of Amino-Aciduria Following Irradiation [1 January 1960–28 February 1961] with UCCM [signed 01 March 1960, effective 01 January 1960]. Document Type: Contract. Date: 1 May 1960

Authors: Saenger et al. Title: Total Body Dosimetry [showing patient numbers, exposed doses in rads; includes handwritten draft of chart]. Document Type: Chart; Notes. Date: 1960–68

Author: Defense Atomic Support Agency. Title: Contract No. DA-49-146-XZ-029, Modification No. 1, University of Cincinnati [extension through 30 April 1962]. Document Type: Contract Modification. Date: 28 February 1961

Author: Defense Atomic Support Agency. Title: Contract No. DA-49-146-XZ-029, Modification No. 2, University of Cincinnati. Document Type: Contract Modification. Date: 15 June 1961

Author: Eugene L. Saenger, M.D. Title: Metabolic Changes in Humans Following Total Body Irradiation, February 1960 through October 1961. Document Type: Report. Date: 1961 est.

Authors: Department of Defense, Defense Atomic Support Agency. Title: Contract No. DA-49-146-XZ-029, Modification No. 3, University of Cincinnati [extension through 28 February 1963] [signed 21 May 1962, effective 15 April 1962]. Document Type: Contract Modification. Date: 21 May 1962

Title: Subtask Title: Metabolic Changes in Humans Following Total Body Irradiation, in Nuclear Weapons Effects Research, Semiannual Progress Summary 1 October 1962. Document Type: Report; Excerpt. Date: 1962

Author: Defense Atomic Support Agency. Title: Contract No. DA-49-146-XZ-029, Modification No. 4, University of Cincinnati [1 January 1960–30 April 1964] [signed 20 May 1963, effective 01 April 1963]. Document Type: Contract Modification. Date: 20 May 1963

Author: Eugene L. Saenger, M.D., Principal Investigator. Title: Metabolic Changes in Humans Following Total Body Radiation, 01 November 1961–30 April 1963. Document Type: Report; Excerpt. Date: 1963 est.

DEFENSE SPECIAL WEAPONS AGENCY/ARMED FORCES RADIOBIOLOGY INSTITUTE 1944-1974 (CONTINUED)

Cincinnati General Hospital, Cincinnati, OH (continued)

Author: Defense Atomic Support Agency. Title: Contract No. DA-49-146-XZ-029, Modification No. 5, University of Cincinnati [1 September 1961–31 August 1962]. Document Type: Contract Modification. Date: 17 March 1964

Author: Defense Atomic Support Agency. Title: Contract No. DA-49-146-XZ-029, Modification No. 6, University of Cincinnati [1 September 1962–31 August 1963]. Document Type: Contract Modification. Date: 30 April 1964

Authors: E. L. Saenger; J. G. Kereiakes; Helen Berry. Title: Urinary Excretion of Amino Acids and Nucleosides by Cancer Patients Following Whole-Body Irradiation. Journal: *Radiation Research,* vol. 22, issue 1. Document Type: Abstract. Date: May 1964

Authors: Ben I. Friedman, M.D.; Eugene L. Saenger, M.D.; Michael S. Kreindler. Title: Endoreduplication in Leucocyte Chromosomes, Preliminary Report of Its Relation to Cancer and Whole-Body Irradiation. Journal: *The Lancet.* Document Type: Journal Article. Date: 5 September 1964

Authors: Eugene L. Saenger, M.D. et al Title: Metabolic Changes in Humans Following Total Body Irradiation, 1 May 1963–29 February 1964. Document Type: Report. Date: 1964 est.

Authors: DASA. Title: Contract for: Research to Obtain New Information About the Metabolic Effects of Total-Body and Partial-Body Irradiation [01 June 1964–30 June 1965]. Document Type: Contract Modification. Date: 5 January 1965

Title: Consent for Special Study and Treatment (...bone marrow aspiration and to store bone marrow...). Document Type: Form. Date: 1 May 1965

Title: Consent for Special Study and Treatment (...whole or partial-body irradiation and marrow autotransplant...). Document Type: Form. Date: 1 May 1965

Title: Consent for Special Study and Treatment for Whole or Partial-Body Irradiation, Signed (Patient Name Redacted). Document Type: Form. Date: 1 May 1965

Title: Consent to Special Study and Treatment [for whole or partial-body irradiation]. Document Type: Form. Date: 1 May 1965

From: Ralph C. Rursick; E. L. Saenger. To: Defense Atomic Support Agency, Attn.: STMD. Subject: NWER No. 03.009: Summary of Fund Requirements [description of upcoming research]. Document Type: Letter. Date: 17 May 1965

Title: Six Consent Forms (Consent for Special Study and Treatment, and Voluntary Consent Statement) for Bone Marrow Aspiration, Whole or Partial-Body Irradiation, Whole or Partial Irradiation and Marrow Autotransplant, and Bone Marrow Transplantation. Document Type: Form. Date: 1965–1972

Title: [cost summaries: Research Grants and Contracts, Dr. Eugene Saenger, 1965–1985] Subject: [log of funding of various research grants and contracts from various government agencies]. Document Type: Report; Budget. Date: 1965–1985

Authors: A. J. Luzzio, Ph.D.; B. I. Friedman, M.D.; J. G. Kereiakes, Ph.D.; E. L. Saenger, M.D. Title: Specific Proteins in Serum of Total-Body Irradiated Humans [pre-publication paper]. Document Type: Paper. Date: 1965 est.

Title: 14 Consent Forms (Consent for Special Study and Treatment, and Faculty Committee on Research Voluntary Consent Statement) for Treatments Including: Total or Partial-Body Irradiation, Drug Treatment, and Bone Marrow Aspiration or Transplantation. Document Type: Form. Date: 1965–72 est.

Author: DASA. Title: Contract No. DA-49-146-XZ-315, Modification 1 [contract for research to obtain information about the metabolic effects of total- and partial-body irradiation, University of Cincinnati, 30 June 1965–30 April 1966]. Document Type: Contract Modification. Date: 22 January 1966

Authors: A. J. Luzzio, Ph.D.; B. I. Friedman, M.D.; J. G. Kereiakes, Ph.D.; E. L. Saenger, M.D. Title: Specific Proteins in Serum of Total-Body Irradiated Humans (Effects of Laser Radiation on Immune Mechanisms, Work Unit no. 012, Biophysics; Report No. 660) [reprint of article in the *Journal of Immunology*]. Document Type: Journal Article. Date: 4 March 1966

DEFENSE SPECIAL WEAPONS AGENCY/ARMED FORCES RADIOBIOLOGY INSTITUTE 1944-1974 (CONTINUED)

Cincinnati General Hospital, Cincinnati, OH (continued)

From: Edward A. Gall, M.D., Director, Faculty, Committee on Research. To: Dr. Clifford G. Grulee, Jr., Dean, College of Medicine. Subject: The Opinion of the Faculty Committee on Research Regarding a Research Project Entitled, "Protection of Humans with Stored Autologous Marrow" [submitted by Drs. B. I. Friedman and E. L. Saenger]. Document Type: Letter. Date: 6 May 1966

From: Edward A. Gall, M.D., Director [Faculty Committee on Research]. To: Dr. Clifford G. Grulee, Jr., Dean, College of Medicine, University of Cincinnati. Subject: [approval of research proposal submitted by Dr. Thomas L. Wright; letter to Wright from Grulee is attached]. Document Type: Letter. Date: 24 August 1966

From: Eugene A. Confrey, Ph.D., Director, Division of Research Grants, DHEW. To: Clifford G. Grulee, Jr., Dean, University of Cincinnati College of Medicine. Subject: The Public Health Service Has Reviewed and Accepted the Statement of Assurance Dated October 26, 1966. Document Type: Letter. Date: 15 November 1966

Title: Contract No. DA-49-146-XZ-029, Modification No. 7, University of Cincinnati. Document Type: Contract Modification. Date: 29 November 1966

Authors: Ben I. Friedman; Eugene L. Saenger. Title: Protection of Humans with Stored Autologous Marrow [includes consent forms]. Documcnt Type: Form; Proposal. Date: 1966

Authors: A. J. Luzzio; B. I. Friedman; J. G. Kereiakes; E. L. Saenger. Title: Specific Proteins in Serum of Total-Body Irradiated Humans. Journal: *Journal of Immunology*, vol. 96, issue 1. Document Type: Journal Article. Date: 1966

Authors: E. L. Saenger; B. I. Friedman; J. G. Kereiakes; H. Perry, Radioisotope Laboratory and Dept. of Radiology, University of Cincinnati College of Medicine. Title: Effects of Whole-Body and Half-Body Irradiation in Human Beings with Cancer. Document Type: Report; Excerpt. Date: 1966 est.

Authors: Eugene L. Saenger, M.D. et al. Title: Metabolic Changes in Humans Following Total-Body Irradiation, February 1960 through 30 April 1966. Document Type: Report. Date: 01 September 1966

Title: University of Cincinnati Medical Center, Faculty Committee on Research, Voluntary Consent Statement (Procedure: Radiation of the Whole-Body). Document Type: Form. Date: 1966 est.

From: Dr. George Shields. To: Dr. Edward A. Gall [Director, Faculty Committee on Research]. Subject: Protection of Humans with Stored Autologous Marrow [an internal committee review on the proposal submitted by Friedman and Saenger]. Document Type: Memorandum. Date: 13 March 1967

Author: DASA. Title: Contract No. DA-49-146-XZ-315, Modification 2 [contract for research to obtain information about the metabolic effects of total- and partial-body irradiation, University of Cincinnati, 01 June 1964–31 October 1967]. Document Type: Contract Modification. Date: 14 March 1967

From: Thomas E. Gaffney, M.D. To: Dr. Edward Gall, Chairman, Clinical Research Committee [Faculty Committee on Research]. Subject: [internal committee review of the proposed study entitled "The Therapeutic Effect of Total Body Irradiation Followed by Infusion of Stored Autologous Marrow in Humans" submitted by Friedman and Saenger]. Document Type: Memorandum. Date: 17 April 1967

From: Edward P. Radford, M.D. To: Dr. Edward A. Gall [Director, Faculty Committee on Research]. Subject: Application of Dr. Ben I. Friedman and Dr. Eugene L. Saenger [Internal committee review]. Document Type: Memorandum. Date: 29 April 1967

From: Dr. Harvey C. Knowles, Jr. To: Dr. Edward A. Gall [Director, Faculty Committee on Research]. Subject: [internal committee review of the proposal entitled "The Therapeutic Effect of Total Body Irradiation Followed by Infusion of Stored Autologous Marrow in Humans" submitted by Friedman and Saenger]. Document Type: Memorandum. Date: 5 May 1967

From: Dr. H. C. Knowles, Jr. To: Dr. Edward A. Gall [Director, Faculty Committee on Research]. Subject: [internal committee review of proposal entitled "The Therapeutic Effect of Total Body Irradiation Followed by Infusion of Stored Autologous Marrow in Humans" submitted by Friedman and Saenger]. Document Type: Memorandum. Date: 7 May 1967

DEFENSE SPECIAL WEAPONS AGENCY/ARMED FORCES RADIOBIOLOGY INSTITUTE 1944-1974 (CONTINUED)

Cincinnati General Hospital, Cincinnati, OH (continued)

From: R. L. Witt, M.D. To: Dr. Edward A. Gall [Director, Faculty Committee on Research]. Subject: [internal Committee review of proposal entitled "The Therapeutic Effect of Total Body Irradiation Followed by Infusion of Stored Autologous Marrow in Humans" submitted by Friedman and Saenger]. Document Type: Memorandum. Date: 9 May 1967

From: R. L. Witt, M.D. To: Dr. Edward A. Gall [Director, Faculty Committee on Research]. Subject: [internal committee review of proposal entitled "The Therapeutic Effect of Total Body Irradiation Followed by Infusion of Stored Autologous Marrow in Humans" submitted by Friedman and Saenger]. Document Type: Memorandum. Date: 17 May 1967

From: Thomas E. Gaffney, M.D., Director, Division of Clinical Pharmacology to Dr. Edward A. Gall [Director, Faculty Committee on Research]. Subject: The Freidman Proposal for Studies in Total-Body Radiation [internal committee review of proposal submitted by Friedman and Saenger]. Document Type: Letter. Date: 18 May 1967

From: Edward A. Gall, M.D., Director [Faculty Committee on Research]. To: Clifford G. Grulee, Jr., Dean, College of Medicine, University of Cincinnati Medical Center. Subject: [committee recommendations regarding changes in proposal by Friedman]. Document Type: Letter. Date: 22 May 1967

From: Clifford G. Grulee, Jr., M.D., Dean [College of Medicine, University of Cincinnati]. To: Dr. Ben Friedman, Radioisotope Lab. Subject: [forwarding Faculty Research Committee recommendations and modifications of research proposal]. Document Type: Letter. Date: 23 May 1967

Authors: DASA. Title: Contract No. DA-49-146-XZ-315, Modification 3 [contract for research to obtain information about the metabolic effects of total- and partial-body irradiation, University of Cincinnati, 01 March 1967–29 February 1968, effective 25 April 1967]. Document Type: Contract Modification. Date: 28 June 1967

From: D. J. Ryder, LGCM. To: Ruth Lindsey [U. Cincinnati]. Subject: Telephone Memo [negotiations; certification, reception and modification of contracts XZ-315 and 69-C-0131 overhead rates]. Document Type: Memorandum; Contract. Date: 13 August 1967

Authors: Ben I. Friedman, M.D.; Susan J. Toler, B. A. Title: The Effects of Filtration on Stored Bone Marrow. Document Type: Report. Date: 1967 est.

Authors: Eugene L. Saenger, M.D. et al. Title: Metabolic Changes in Humans Following Total-Body Irradiation, 1 May 1966 through 30 April 1967. Document Type: Report. Date: 1967 est.

Author: DASA. Title: Contract No. DA-49-146-XZ-315, Modification 4 [contract for research to obtain information about the metabolic effects of total- and partial-body irradiation, University of Cincinnati, 01 June 1964–14 June 1968]. Document Type: Contract Modification. Date: 29 January 1968

Author: DASA. Title: Contract No. DA-49-146-XZ-315, Modification 5 [continuation of study on metabolic effects of total- and partial-body irradiation in human beings, University of Cincinnati, 01 June 1964–14 June 1969, effective 01 April 1968]. Document Type: Contract Modification. Date: 29 May 1968

Authors: I-Wen Chen; James G. Kereiakes; Ben I. Friedman; Eugene L. Saenger. Title: Colorimetric Analysis of Deoxycytidine in Urine After Separation by Ion-Exchange Column Chromatography. Journal: *Analytical Biochemistry*, vol. 23, issue 2. Document Type: Journal Article. Date: May 1968

Authors: I-Wen Chen, Ph.D.; James G. Kereiakes, Ph.D.; Ben I. Friedman, M.D.; Eugene L. Saenger, M.D. Title: Radiation-Induced Urinary Excretion of Deoxycytidine by Rats and Humans. Journal: *Radiology*, vol. 91, issue 2. Document Type: Journal Article. Date: August 1968

From: Thomas E. Gaffney, M.D., Chairman, Faculty Committee on Research. To: Dr. Clifford G. Grulee, Jr., Dean, College of Medicine, University of Cincinnati. Subject: [Faculty Committee on Research reviews of research proposal submitted by Saenger and Friedman]. Document Type: Letter. Date: 9 December 1968

Authors: Ben I. Friedman, M.D.; Susan Toler, B. A. Title: A Closed Method for Filtration of Human Bone Marrow. Document Type: Report. Date: 1968 est.

DEFENSE SPECIAL WEAPONS AGENCY/ARMED FORCES RADIOBIOLOGY INSTITUTE 1944-1974 (CONTINUED)

Cincinnati General Hospital, Cincinnati, OH (continued)

From: Eugene L. Saenger; Edward B. Silberstein. To: Faculty Committee on Research, Radiation Safety Committee. Subject: Proposal Review of "Investigation of Metabolic Pathways of Labeled Deoxyctidine (3-H and 14-C) in Human Beings." Document Type: Memorandum; Proposal. Date: 1968 est.

Authors: Eugene L. Saenger, M.D. et al. Title: Radiation Effects in Man: Manifestations and Therapeutic Efforts, 1 May 1967 through 30 April 1968. Document Type: Report. Date: 1968 est.

Author: Eugene L. Saenger. Title: [proposal] Subtask: Radiation Effects in Man: Manifestations and Therapeutic Efforts [NWER CM.D. 3.009] Subject: Pre-Award, Proposal, Purchase Request. Document Type: Proposal. Date: 1968–1969 est.

From: Eugene L. Saenger, M.D., Radioisotope Laboratory, Cincinnati General Hospital. To: Dr. Steven Kessler, DASA Project Officer, DASA. Subject: Transmittal of Eight Copies of Contract Proposal for Coming Year. Document Type: Letter. Date: 19 February 1969

From: Capt. J. E. Stark, M.D., USN, Chief, Medical Directorate. To: Distribution. Subject: Negotiation of Contract with University of Cincinnati College of Medicine (for FY 1969). Document Type: Memorandum. Date: 28 February 1969

From: Capt. J. E. Stark, MC, USN, Chief, Medical Directorate. To: OALG, Attn.: LGCM. Subject: Pre-Award Negotiation of Contract with University of Cincinnati College of Medicine [evaluation and recommendations]. Document Type: Report; Contract. Date: 28 February 1969

Author: L. T. Muse, Contracting Officer. Title: Negotiation Report: University of Cincinnati, Cincinnati, Ohio; Predetermined Overhead Rates for Use in Cost-Reimbursement Type Contracts (Except Cost-Sharing Contracts) [negotiation for first contract]. Document Type: Report. Date: 17 March 1969

From: John W. Watson, Contracting Officer. To: LGCM. Subject: Negotiation of Contract with University of Cincinnati College of Medicine. Pre-Award—Authority to Negotiate. Document Type: Memorandum; Contract. Date: 21 March 1969

From: N. W. Martin, Chief, Finance & Accounting Division, Comptroller. To: Chief, Logistics Dir., Contract Mgmt. Division. Subject: Negotiation of Contract with University of Cincinnati College of Medicine [comment no. 3]. Document Type: Memorandum; Contract. Date: 26 March 1969

From: F. V. Fraas, LCDR, USN, Chief, ISCP[OAIS]. To: LGCM. Subject: Negotiation of Contract. Document Type: Memorandum; Contract. Date: 28 March 1969

Authors: Signed by D. Jeanne Ryder, LGCM; John W. Watson, Contracting Officer. Title: Pre-Award Patent Rights Documentation Checklist. Document Type: Form; Contract. Date: 7 April 1969

From: Eugene L. Saenger, M.D. To: Dr. Steven Kessler, DASA Project Officer, Defense Atomic Support Agency. Subject: Pre-award: Contract Proposal. Document Type: Letter; Contract. Date: 7 April 1969

Authors: Signed by John W. Watson, Contracting Officer. Title: Determination and Findings: Authority to Use a Cost-Reimbursement Contract [for Contract No. DASA 01-69-C-0131 with University of Cincinnati] Subject: [justification type contract]. Document Type: Contract. Date: 7 April 1969

Author: John W. Watson, Contracting Officer. Title: Determination and Findings: Responsibility of Contractor [for Contract No. DASA 01-69-C-0131 with University of Cincinnati] Subject: Justification for Type of Contract. Document Type: Letter; Contract. Date: 7 April 1969

Author: Signed by John W. Watson, Contracting Officer. Title: Determination of Personal and Nonpersonal Services [DASA 01-69-C-0131] Subject: [justification contract type]. Document Type: Form; Contract. Date: 7 April 1969

From: D. J. Ryder, LGCM. To: Dr. Saenger; Ruth Lindsey [University of Cincinnati]. Subject: Telephone Memo: Continuation of Work, DA 49-146-XZ-315 [negotiations, record of phone calls]. Document Type: Contract. Date: 29 April 1969

DEFENSE SPECIAL WEAPONS AGENCY/ARMED FORCES RADIOBIOLOGY INSTITUTE 1944-1974 (CONTINUED)

Cincinnati General Hospital, Cincinnati, OH (continued)

From: Eugene L. Saenger, M.D. To: LGCM Mrs. Becker, Defense Atomic Support Agency, DASA HQ. Subject: Letter Describing Contractor's General Policy Concerning Use of Consultants Under Contract DASA 01-69-C-0131 [negotiation]. Document Type: Letter; Contract. Date: 30 April 1969

From: Col. H. B. Mitchell, USAF, MC, Acting Chief, Medical Directorate. To: OALG, Attn.: LGCM. Subject: Amendment to Contract Negotiation with University of Cincinnati College of Medicine [evaluation, recommendations, funds commitment]. Document Type: Memorandum; Contract. Date: 30 April 1969

Author: Signed by D. Jeanne Ryder, LGCM Contract Negotiator. Title: Price Negotiation Memorandum, Contract No. DASA 01-69-C-0131. Subject: Price Negotiation. Document Type: Memorandum; Contract. Date: 30 April 1969

From: D. Jeanne Ryder, LGCM Negotiator. To: Record. Subject: Negotiation of Contract DASA 01-69-C-0131 with University of Cincinnati, College of Medicine [negotiation]. Document Type: Memorandum; Contract. Date: 30 April 1969

From: N. W. Martin, Chief, Finance & Accounting Division, Comptroller. To: Chief, Logistics Dir., Contract Mgmt. Division. Subject: Amendment to Contract Negotiation with University of Cincinnati College of Medicine [funds commitment]. Document Type: Memorandum; Contract. Date: 5 May 1969

From: Ralph E. Ballinger, Contracting Officer. To: University of Cincinnati College of Medicine, Attn.: Eugene L. Saenger, M.D. Subject: Letter Responding to 30 April 1969 Letter from Contractor Regarding Use of Consultants Under Contract DASA 01-69-C-0131 [negotiations]. Document Type: Letter; Contract. Date: 9 May 1969

From: John W. Watson, Contracting Officer. To: Lt. Stephen Kessler, USN, Medical Directorate, Headquarters, DASA. Subject: Designation of Contracting Officer's Representative, Contract No. DASA 01-69-C-0131; University of Cincinnati. Document Type: Letter; Contract. Date: 9 May 1969

From: John W. Watson, Contracting Officer. To: ONR Resident Representative [Purdue University]. Subject: Contract No. DASA 01-69-C-0131; University of Cincinnati [property administrator designation, execution of contract]. Document Type: Letter; Contract. Date: 26 May 1969

Authors: Signed by John W. Watson, Contracting Officer; Ralph C. Bursiek, Clerk, University of Cincinnati. Title: Notice of Award [University of Cincinnati College of Medicine]. Document Type: Contract. Date: May 1969

From: Thomas E. Gaffney, M.D., Chairman, Faculty Committee on Research. To: Dr. Clifford G. Grulee, Jr., Dean, College of Medicine [University of Cincinnati]. Subject: [Faculty Committee on Research review of research proposal submitted by Saenger and Silberstein]. Document Type: Letter. Date: 2 June 1969

From: Everett F. Schneider [ONR Rep., Purdue University]. To: Chief, Contract Division, Defense Atomic Support Agency. Subject: Appointment of Property Administrator for Contract DASA 01-69-C-0131 with University of Cincinnati [doc. ref: ONR Laf/657:vm, DASA 0131, 3 June 1969]. Document Type: Memorandum; Contract. Date: 3 June 1969

Title: Copy No. 2, Contract No. DASA 01-69-C-0131, University of Cincinnati. From: Headquarters, Defense Atomic Support Agency. Subject: Contract. Document Type: Contract; Appendix/Attachment. 15 June 1969

From: Eugene L. Saenger, M.D. To: Ralph E. Ballinger [Contracting Officer, DASA]. Subject: Contracts DA49-146-XZ-315 & DASA 01-69-C-0131 [negotiation of overhead rates]. Document Type: Letter; Contract. Date: 29 July 1969

Author: Signed by D. Jeanne Ryder, Negotiator. Title: Contract No. DASA 01-69-C-0131 with University of Cincinnati [negotiator's checklist]. Subject: [negotiation]. Document Type: Contract; List. Date: 13 August 1969

From: Ronald C. Leach, Fiscal Officer and Assistant to the Dean [University of Cincinnati, College of Medicine]. To: Headquarters DASA, Defense Atomic Support Agency, Attn.: LGCM. Subject: Completed Forms Required for Contract [includes Contingent Fee Statement, Equal Opportunity Statement, and Certification of Nonsegregated Facilities]. Document Type: Letter; Contract; Appendix/Attachment. Date: 19 August 1969

Cincinnati General Hospital, Cincinnati, OH (continued)

From: John W. Watson, Contracting Officer. To: Record. Subject: Contract Modification No. DASA 01-69-C-0131-P001 University of Cincinnati [negotiation]. Document Type: Memorandum. Date: 26 September 1969

From: F. V. Fraas, LCDR, USN, Chief, ISCP. To: ISCP; LGCM. Subject: Security Review of Contract No. DASA 01-69-C-0131 [includes complying security review checklist, from ISCP to LGCM, undated]. Document Type: Memorandum; Contract. Date: 15 October 1969

From: Ralph E. Ballinger, Contract Reviewer, Headquarters, DASA. To: Record. Subject: Review of Proposed Contract No. DASA 01-69-C-0131, University of Cincinnati [funding recommended, review of contract, draft cont., approval of award]. Document Type: Memorandum; Contract. Date: 20 October 1969

From: John W. Watson, Contracting Officer [LGCM]. To: University of Cincinnati College of Medicine. Subject: Execution of Contract No. DASA 01-69-C-0131 [distribution, execution of contract]. Document Type: Letter; Contract. Date: 20 October 1969

From: Lorrayne G. Stork, Administrative Assistant [University of Cincinnati School of Medicine]. To: John W. Watson, Contracting Officer DASA, LGCM. Subject: Return of Signed Contract (DASA 01-69—0131), with Overhead Rate Change Amendment [distribution of contract]. Document Type: Letter; Contract. Date: 5 November 1969

From: John W. Watson, Contracting Officer [LGCM]. To: University of Cincinnati College of Medicine. Subject: Copy No. 3 of the Contract No. DASA 01-69-C-0131 [execution of contract, distribution of contract]. Document Type: Letter; Contract. Date: 18 November 1969

Author: Signed by John W. Watson, Contracting Officer. Title: Contract Distribution List [for Contract No. DASA 01-69-C-0131] Subject: [contract distribution]. Document Type: Contract; List. Date: 18 November 1969

Title: Individual Procurement Action Report [for Contract DASA 01-69-C-0131, A Study of Radiation Effects in Man: Manifestations and Therapeutic Efforts] Subject: [approval of award, distribution of contract]. Document Type: Form; Contract. Date: 18 November 1969

From: F. V. Fraas, LCDR, USN, Chief, ISCP. To: ISCP; LGCM. Subject: Security Review of Contract No. DASA 01-69-C-0131 [and security classification review report, dated 21 November 1969, from ISCP to LGCM]. Document Type: Memorandum; Contract. Date: 18–21 November 1969

Authors: Louis A. Gottachalk, M.D.; Robert Kunkel, M.D.; Theodore H. Wohl, Ph.D.; Eugene L. Saenger, M.D.; Carolyn N. Winget, M. A. Title: Total and Half Body Irradiation; Effect on Cognitive and Emotional Processes. Journal: *Arch. Gen. Psychiat*, vol. 21. Document Type: Journal Article. Date: November 1969

Author: DASA. Title: Contract No. DA-49-146-XZ-315, Modification 6 [extension of contract completion date and incorporation of final negotiated overhead rates for FY 1968 and FY 1969, effective 14 June 1969 [includes memorandum regarding contract close-out, 14 September 1970]. Document Type: Contract Modification. Date: 19 December 1969

Author: I-Wen Chen. Title: A Progress Report for the Studies on the Radiation-Induced Urinary Excretion of Deoxyribonucleic Acid Component. Document Type: Report. Date: 1969

Title: [Dosimetry Measurements and Calculations: #105, Lateral Head 16 cm]. Document Type: Notes. Date: 1969–1971

Title: Cumulative Payment Record of DASA Contract DASA 01-69-0131 and Subsequent Modifications [lists vouchers by number, date, and amount, covering June 1969–December 1972]. Document Type: Contract; Budget; List. Date: 1969–1972

Authors: Eugene L. Saenger, M.D. et al. Title: Radiation Effects in Man: Manifestations and Therapeutic Effects [proposal for research to obtain new information about the metabolic effects of total body and partial-body irradiation]. Document Type: Proposal; Excerpt. Date: 1969 est.

DEFENSE SPECIAL WEAPONS AGENCY/ARMED FORCES RADIOBIOLOGY INSTITUTE 1944-1974 (CONTINUED)

Cincinnati General Hospital, Cincinnati, OH (continued)

Authors: Edward B. Silberstein, M.D.; E. L. Saenger, M.D.; J. Kereiakes, M.D. Subject: [laboratory notes, calculations, and correspondence]. Document Type: Letter; Chart; Notes; File. Date: 1969–1973 est.

From: John W. Watson, Contracting Officer [OAPR]. To: University of Cincinnati College of Medicine. Subject: Notice of Requested Information for Administrative Close-Out of Contract No. DASA 01-69-C-0131, Final Patents Report and Certification of Level of Effort. Document Type: Letter; Contract. Date: 7 March 1970

From: Col. Edward J. Huycke, MC, USA, Chief, Medical Directorate. To: OALG, Attn.: LGCM. Subject: Modification of Contract No. DASA 01-69-C-0131 with the University of Cincinnati College of Medicine (Evaluation, Recommendations) [proposal, negotiation, review of contract]. Document Type: Report. Date: 23 March 1970

From: R. G. Niles, Chief, ISCP. To: LGCM. Subject: Modification of Contract No. DASA 01-69-C-0131 with the University of Cincinnati College of Medicine. Document Type: Memorandum. Date: 2 April 1970

From: W. F. Thacher, Jr., LTC, USA, Finance and Accounting Officer. To: Chief, Logistics Dir., Contract Mgmt. Div. Subject: Modification of Contract No. DASA 01-69-C-0131 [-P001] with the University of Cincinnati College of Medicine [Funds Commitment]. Document Type: Budget. Date: 8 April 1970

Author: Signed by John W. Watson, Contracting Officer. Title: Contracting Officer's Determination as to Nonpersonal Nature of Services To Be Obtained Under Modification Number DASA 01-69-C-0131-P001 with University of Cincinnati. Subject: [justification for contract type]. Document Type: Contract. Date: 13 April 1970

Author: Signed by John W. Watson, Contracting Officer. Title: Determination and Findings: Authority to Use a Cost-Reimbursement Contract [for Contract No. DASA 01-69-C-0131, Modification No: P001 with University of Cincinnati] Subject: [justification contract type]. Document Type: Report. Date: 13 April 1970

From: Carl. D. Dedillo, LTC, USA, Director of Logistics. To: Director, Defense Atomic Support Agency, Attn.: LGCM, Washington, D.C. Subject: [capital equipment transfer related to Contract DA-49-146-XZ-315 close-out (enclosure: forwarded memo from E. F. Schneider recommending disposition)]. Document Type: Memorandum. Date: 21 April 1970

From: John W. Watson, Chief, Contracting Division. To: ONR Resident Representative, Purdue University, Department of the Navy, Office of Naval Research. Subject: Property Administrator's Final Report on Contract DASA 01-69-C-0131 with the University of Cincinnati. Document Type: Letter. Date: 4 May 1970

From: Signed by D. Jeanne Ryder, LGCM Negotiator. To: Record. Subject: Negotiation of Contract DASA 01-69-C-0131-P001 with University of Cincinnati, Proposal No. RM.D. 3.009 Dated 1970 [negotiation]. Document Type: Memorandum. Date: 13 May 1970

Author: Signed by D. Jeanne Ryder. Title: Negotiator's Checklist, Contract No. DASA 01-69-C-0131 with University of Cincinnati, Modification No. P001. Subject: [negotiation (mod 1)]. Document Type: List. Date: 13 May 1970

Author: Signed by D. Jeanne Ryder, LGCM, Contract Negotiator. Subject: Price Negotiation Memorandum, Contract/Modification No. DASA 01-69-C-0131-P001. Document Type: Memorandum; Contract. Date: 13 May 1970

From: Eugene L. Saenger, M.D. To: Headquarters, Defense Atomic Support Agency, Department of Defense, Attn.: Jeanne Ryder. Subject: Contract Negotiations for Pending Contract [DASA 01-69-C-0131-P001] Discussed on May 13, 1970 [includes Negotiation Agreement A-88 DHEW Negotiation with University of Cincinnati, dated 01 April 1970]. Document Type: Letter; Contract. Date: 15 May 1970

From: R. G. Niles, Classification Analyst, DASA. To: ISCP; LGCM. Subject: Security Review of Contract Number: DASA 01-69-C-0131-P001 [draft of contract]. Document Type: Memorandum. Date: 10 June 1970

From: Ralph E. Ballinger, Contract Reviewer, Headquarters, DASA. To: Record. Subject: Review of Proposed Contract Modification No. DASA 01-69-C-0131-P001 University of Cincinnati [funding re¡commended, review of contract]. Document Type: Memorandum. Date: 11 June 1970

DEFENSE SPECIAL WEAPONS AGENCY/ARMED FORCES RADIOBIOLOGY INSTITUTE 1944-1974 (CONTINUED)

Cincinnati General Hospital, Cincinnati, OH (continued)

From: John W. Watson, Contracting Officer [LGCM]. To: University of Cincinnati College of Medicine. Subject: Execution of Contract Modification No. DASA 01-69-C-0131-P001 [execution, distribution of contract]. Document Type: Letter. Date: 11 June 1970

Author: Headquarters, Defense Atomic Support Agency [John Watson, Contracting Officer]. Title: Copy No. 2, Contract Modification No. Contract DASA 01-69-C-0131-P001, University of Cincinnati. Document Type: Appendix/Attachment. Date: 15 June 1970

From: Lorrayne G. Stork, Administrative Assistant. To: Headquarters, Defense Atomic Support Agency; Attn.: John W. Watson, Contracting Officer. Subject: Contract Modification No. DASA 01-69-C-0131-P001 [establishment of, signing of, execution, distribution]. Document Type: Letter. Date: 25 June 1970

From: R. V. Lindsey for E. L. Saenger. To: D. J. Ryder, Headquarters Defense Atomic Support, LGCM Agency. Subject: Contract Modification No. DASA 01-69-C-0131-P001 [notification of award, approval of award]. Document Type: Telegram. Date: 26 June 1970

Author: Signed by John W. Watson, Contracting Officer. Title: Contract Distribution List [for Contract No. DASA 01-69-C-0131-P0001]. Document Type: List. Date: 30 June 1970

From: John W. Watson, Contracting Officer. To: Ralph C. Bursiek, Clerk. Subject: Copy No. 3, Contract Modification No. DASA 01-69-C-0131 - P001 [distribution]. Document Type: Letter. Date: 30 June 1970

Title: Individual Procurement Action Report [for Contract DASA 01-69-C-0131-P001, continuation of study of radiation effects in man and incorporation of final negotiated overhead rate for FY 1969] Subject: [distribution of contract]. Document Type: Form. Date: 30 June 1970

From: Wilma H. Loichinger, Assistant Controller, Grants & Contracts. To: Defense Atomic Support Agency, Department of Defense, Attn.: Contracting Officer/Univ. Cincinnati. Subject: Letter Regarding Contractor's Computation of Overhead Rates for Research as of 30 June 1970 [includes list of rates/and memo initiating closure of DASA 01-69-0131]. Document Type: Letter; Budget. Date: 19 October 1970–2 April 1971

From: Mrs. Lessinger, University of Cincinnati. To: H. Sullivan, LGCM. Subject: Telephone Memo [inquiry if the stipulated salary support in the contract is mandatory, discussion of contract cost principles and procedures]. Document Type: Memorandum. Date: 23 October 1970

From: D. J. Ryder, LGCM. To: Mrs. Lessinger, University of Cincinnati. Subject: Telephone Memo [discussion of contractor's exception to stipulated salary support item in the contract, negotiations leading to mod 2] [DASA 01-69-C-0131-P001]. Document Type: Memorandum. Date: 26 October 1970

From: Eugene L. Saenger, M.D. To: Contracting Officer, Defense Atomic Support Agency, DASA Headquarters, Attn.: Mrs. Jean Ryder. Subject: Contact Modification-Negotiation for Coverage of Funding Gap for DASA 01-69-C-0131: Request for Consultant's Fee ["proposal" leading to mod 2]. Document Type: Letter. Date: 26 October 1970

From: John W. Watson, Contracting Officer. To: Lt. R. C. Loynd, USN, Medical Directorate, Headquarters, DASA. Subject: Designation of Contracting Officer's Representative Contract/Notice of Award DASA 01-69-C-0131 [authority to negotiate]. Document Type: Letter. Date: 26 October 1970

Authors: Eugene L. Saenger, M.D. et al. Title: Radiation Effects in Man: Manifestations and Therapeutic Efforts, May 1, 1968, through April 30, 1969 [includes raw data, graphs]. Document Type: Report. Date: October 1970

Author: [Headquarters, Defense Atomic Support Agency]. Title: Copy No. 2, Contract Modification No. 2 of Contract DASA 01-69-C-0131-P00002, University of Cincinnati. Document Type: Contract Modification. Date: 2 November 1970

From: Evelyn V. Hess, Chairman, Faculty Committee on Research. To: Alvin Mauer, Associate Professor of Pediatrics, Children's Hospital. Subject: Solicitation of Outside Consultant for Review of Proposal "Therapeutic Effect of Total-Body

Cincinnati General Hospital, Cincinnati, OH (continued)

Irradiation Followed by Infusion of Stored Autologous Marrow in Humans." Document Type: Letter. Date: 19 November 1970

Subject: Submission of Consent Forms to Faculty Committee on Research for Review (two copies). Document Type: Letter. Date: 18 December 1970

Authors: Eugene L. Saenger, M.D. et al. Title: Radiation Effects in Man: Manifestations and Therapeutic Effects; Annual Report May 01, 1969–April 30, 1970. Document Type: Report. Date: December 1970

Authors: Edward B. Silberstein, M.D.; I-Wen Chen, Ph.D.; Eugene L. Saenger, M.D.; James G. Kereiakes, Ph.D. Title: Cytologic-Biochemical Radiation Dosimeters in Man. Document Type: Report; Chart. Date: 1970 est.

Subject: [notes on terms of stipulated salary support for faculty involved in Contract DASA 01-69-C-0131-P001 with University of Cincinnati, negotiations leading to mod 2]. Document Type: Contract. Date: 1970 est.

Subject: [rationale behind Dr. Saenger's objection to stipulated salary support, negotiation leading to mod 2]. Document Type: Notes; Transcript; Excerpt. Date: 1970 est.

Title: Dose Measurements in Rando Phantom, 1970 [Rando Phantom cross sections with dosimetry calculations. Document Type: Chart. Date: 1970–72

From: Ralph E. Ballinger, Contract Reviewer, Headquarters, DASA. To: Record. Subject: Review of Proposed Contract Modification No. DASA 01-69-C-0131-P00002 University of Cincinnati (funding recommended) [includes telephone memo]. Document Type: Memorandum. Date: 10 January 1971

From: John W. Watson, Contracting Officer. To: University of Cincinnati College of Medicine. Subject: Execution of Contract Modification No. DASA 01-69-C-0131-P00002 [copy distribution; execution, distribution]. Document Type: Letter. Date: 12 January 1971

From: Everett F. Schneider, Property Administrator (ONR Resident Representative, Purdue University). To: Commanding Officer, Defense Atomic Support Agency (LGCM/J. W. Watson). Subject: Contract DASA 01-69-C-0131 with the University of Cincinnati [includes interim inventory and assignment of property titles]. Document Type: Letter; List. Date: 25 January 1971

From: Lorrayne G. Stork, Administrative Assistant, University of Cincinnati. To: John W. Watson, Contracting Officer [DASA]. Subject: Contract Modification No. DASA 01-69-C-0131-P00002 [copy distribution and signing, execution, distribution]. Document Type: Letter. Date: 5 February 1971

From: E. V Hess, Faculty Committee on Research. To: Dr. Silberstein. Subject: Revised Protocol—"The Therapeutic Effect of Total- Body Irradiation Followed by Infusion of Autologous or Isologous Marrow in Humans" (by E. Silberstein, M.D.) [internal committee review of revised proposal]. Document Type: Memorandum. Date: 16 February 1971

Author: Signed by John W. Watson, Contracting Officer. Title: Contract Distribution List [for Contract No. DASA 01-69-C-0131-P00002] Subject: [distribution mod 2]. Document Type: List. Date: 24 February 1971

From: John W. Watson, Contracting Officer. To: University of Cincinnati College of Medicine. Subject: Copy No. 3, Contract Modification No. DASA 01-69-C-0131-P00002 [execution of contract modification, distribution]. Document Type: Letter. Date: 24 February 1971

From: Edward B. Silberstein, M.D. To: Evelyn V. Hess, M.D., Chairman, Faculty Committee on Research. Subject: Reply to Faculty Committee on Research Recommendations for Revising Research Proposal. Document Type: Letter. Date: 6 March 1971

From: Evelyn V. Hess, M.D., Chairman, Faculty Committee on Research. To: Dr. Clark West; Dr. Harvey Knowles; Dr. Virginia Donaldson; Dr. Alvin Mauer. Subject: Faculty Committee on Research Minutes of Meeting [review of Saenger proposal, interview with Saenger]. Document Type: Memorandum. Date: 9 March 1971

DEFENSE SPECIAL WEAPONS AGENCY/ARMED FORCES RADIOBIOLOGY INSTITUTE 1944-1974 (CONTINUED)

Cincinnati General Hospital, Cincinnati, OH (continued)

From: Eugene L. Saenger, M.D. To: Dr. Robert Loind, Defense Atomic Support Agency. Subject: DASA -01-69-C-0131 [proposal and budget for FY 73]. Document Type: Letter; Budget. Date: 22 March 1971

From: Col. Edward J. Huycke, MC, USA, Director for Medical Research. To: J-4CM. Subject: Modification of Contract No. DASA 01-69-C-0131 with the University of Cincinnati College of Medicine [evaluation and recommendations; includes form DD1423, Contracts Requirements List, and related instructions, and related cost appropriation memo]. Document Type: Report. Date: 22 March 1971

From: R. G. Niles, Chief, J-2CP. To: J-4. Subject: Modification of Contract No. DASA 01-69-C-0131 with the University of Cincinnati, College of Medicine. Document Type: Memorandum. Date: 22 March 1971

From: Eugene L. Saenger, M.D. To: Dr. Robert Loind, Defense Atomic Support Agency, Attn.: STND. Subject: DASA 01-69-C-0131 [includes proposal for FY 1971; proposal]. Document Type: Letter; Proposal; Budget. Date: 22 March 1971

From: Eugene L. Saenger, M.D. To: Dr. Robert Loind, Defense Atomic Support Agency, Attn.: STND. Subject: DASA 01-69-C-0131 [includes proposal for FY 1973, with budget details on reverse of letter; proposal]. Document Type: Letter; Budget; Excerpt. 22 March 1971

From: Eugene L. Saenger. To: Robert Loind. Subject: Proposal for FY73. Document Type: Letter. Date: 22 March 1971

From: Evelyn V. Hess, M.D., Chairman, Faculty Committee on Research. To: Edward B. Silberstein, M.D. Subject: Transmittal of the Recommendations of the Faculty Committee on Research [includes the recommendations on total-body irradiation]. Document Type: Letter. Date: 26 March 1971

Title: [form indicating completion date of contract, for DASA 01-69-C-0131]. Document Type: Form. Date: 31 March 1971

Author: Headquarters, Defense Atomic Support Agency. Title: Copy No. 2, Contract Modification No. 3 of Contract DASA 01-69-C-0131-P00003, University of Cincinnati. Document Type: Contract. Date: 1 April 1971

From: W. F. Thacher, Jr., LTC, USA, Finance and Accounting Officer. To: Chief, Logistics Dir., Contract Mgmt. Div. Subject: Modification of Contract No. DASA 01-69-C-0131 [-P00003] with the University of Cincinnati College of Medicine [funds commitment]. Document Type: Budget. Date: 7 April 1971

From: Asher Tenner, Regional Audit Director, HEW Audit Agency. To: Director, Defense Atomic Support Agency. Subject: Notice to Contracting Officer that Technical Performance Under Contract No. DASA 01-69-C-0131 Is Completed. Document Type: Report. Date: 12 April 1971

Author: Signed by John W. Watson, Contracting Officer. Title: Contracting Officer's Determination as to Nonpersonal Nature of Services To Be Obtained Under Contract/Modification Number DASA 01-69-C-0131-P00003 with University of Cincinnati, College of Medicine. Subject: [justification of contract type]. Document Type: Contract. Date: 12 April 1971

Author: Signed by John W. Watson, Contracting Officer. Title: Determination and Findings: Authority to Use a Cost-Reimbursement Contract [for Contract No. DASA 01-69-C-0131-P00003 with University of Cincinnati]. Subject: [justification of contract type]. Document Type: Report. Date: 12 April 1971

From: Eugene L. Saenger, M.D. [University of Cincinnati, College of Medicine]. To: Roger Rapaport. Subject: [follow-up to telephone conversation; objectives of whole- and partial-body radiation exposure, with emphasis on treatment of cancer; enclosures mentioned but absent]. Document Type: Letter. Date: 19 April 1971

From: Edward B. Silberstein, M.D. To: Eugene L. Saenger, M.D. Subject: [telephone conversation with Evelyn Hess regarding Human Research Committee review of current protocol, as well as GAO investigation]. Document Type: Memorandum. Date: 20 April 1971

From: Edward B. Silberstein and Eugene L. Sanger. To: Evelyn Hess, Chairman, Faculty Committee on Research. Title: The Therapeutic Effects of Total-Body Irradiation Followed by Infusion of Autologous Marrow in Humans (Draft 2). Document Type: Memorandum; Proposal. Date: 4 May 1971

DEFENSE SPECIAL WEAPONS AGENCY/ARMED FORCES RADIOBIOLOGY INSTITUTE 1944-1974 (CONTINUED)

Cincinnati General Hospital, Cincinnati, OH (continued)

From: [Eugene Saenger; handwritten memo]. To: Mrs. Ruth Lindsay, University of Cincinnati, and Miss Ryder, DASA. Subject: "Personnel Budget" [stating positions and salary as amounts and percentages of budget; proposal]. Document Type: Notes; Budget. Date: 5 May 1971

From: D. Jeanne Ryder, [J-4CM] Contract Negotiator. To: Record. Subject: Negotiation of Contract DASA 01-69-C-0131 Mod. P00003 with University of Cincinnati College of Medicine [negotiation]. Document Type: Memorandum. Date: 6 May 1971

Author: Signed by D. Jeanne Ryder, Negotiator. Title: Negotiator's Checklist, Contract No. DASA 01-69-C-0131 with University of Cincinnati, Modification No. P00003. Subject: [negotiation]. Document Type: Budget; Excerpt; List. Date: 6 May 1971

From: Eugene L. Saenger, M.D. To: Miss Jean Ryder, Defense Atomic Support Agency, J-4CM. Subject: DASA 01-69-C-0131 [mod. P00003; budget corrections; negotiations]. Document Type: Letter; Budget; Excerpt. Date: 6 May 1971

Subject: Price Negotiation Memorandum, Contract/Modification No. DASA 01-69-C-0131-P00003 [signed by D. Jeanne Ryder, J-4CM, Contract Negotiator, and John W. Watson, Contracting Officer]. Document Type: Memorandum. Date: 6 May 1971

From: Vernon J. Rolf, Fiscal Officer [University of Cincinnati]. To: Mrs. Jean Ryder, Defense Atomic Support Agency, J-4CM. Subject: DASA 01-69-C-0131, Modification P00003, Representations & Certifications Required [negotiation]. Document Type: Letter. Date: 11 May 1971

From: J-4CM. To: J-2CP. Subject: Security Review of Contract No. DASA 01-69-C-0131-P00003 [draft of contract]. Document Type: Memorandum. Date: 25 May 1971

From: Ralph E. Ballinger, Contract Reviewer, Headquarters, DASA. To: Record. Subject: Review of Proposed Contract Modification No. DASA 01-69-C-0131-P00003, the University of Cincinnati [funding approved; contract review]. Document Type: Letter. Date: 28 May 1971

From: John W. Watson, Contracting Officer [J-4CM]. To: University of Cincinnati College of Medicine. Subject: Execution of Contract Modification No. DASA 01-69-C-0131-P00003 [copy distribution; execution; distribution]. Document Type: Letter. Date: 28 May 1971

From: Lorrayne G. Stork, Administrative Assistant [University of Cincinnati]. To: John W. Watson, Contracting Officer [DASA]. Subject: Contract Modification No. DASA 01-69-C-0131-P00003 [return of signed copies; execution, distribution]. Document Type: Letter. Date: 24 June 1971

From: John W. Watson, Contracting Officer [J-4CM]. To: Lorrayne G. Stork, Administrative Assistant [University of Cincinnati]. Subject: Forwarding of Negotiation Agreement for Period 2/28/71 through 6/30/71 and 7/1/71 through 6/30/73. Document Type: Letter. Date: 28 June 1971

From: Wilma H. Loichinger, Assistant Controller, Grants & Contracts. To: Defense Atomic Support Agency, Department of Defense, Attn.: Contracting Officer. Subject: DASA 01-69-C-0131 [indirect cost rates negotiated with DHEW, negotiation; enclosure is RCC1.958005.014I]. Document Type: Letter. Date: 7 July 1971

From: Evelyn V. Hess, M.D., Chairman, Faculty Committee on Research. To: Dr. Edward B. Silberstein; Dr. Eugene L. Saenger. Subject: The Therapeutic Effects of Total and Large Field Partial-Body Irradiation Followed by Infusion of Autologous Marrow in Humans [internal committee review of proposal submitted by Silberstein and Saenger]. Document Type: Memorandum. Date: 22 July 1971

From: Eugene L. Saenger, M.D. To: Dr. Robert Loind, STMD., Defense Nuclear Agency. Subject: Annual Report of Contract DASA 01-69-C-0131 for 1 May 1970–30 April 1971 [request for new equipment, one item to be purchased from ORNL]. Document Type: Letter. Date: 22 July 1971

From: Everett F. Schneider, Property Administrator (ONR Resident Representative). To: Director, Defense Nuclear Agency (LGCM/J.W. Watson). Subject: Contract DASA 01-69-C-0131 with the University of Cincinnati [includes inventory list (Ref ONR Laf/657 vm Cinci-0131 29 July 1971)]. Document Type: Memorandum; List. Date: 29 July 1971

DEFENSE SPECIAL WEAPONS AGENCY/ARMED FORCES RADIOBIOLOGY INSTITUTE 1944-1974 (CONTINUED)

Cincinnati General Hospital, Cincinnati, OH (continued)

From: Edward B. Silberstein, M.D.; Eugene L. Saenger, M.D. To: Evelyn Hess, M.D. [Chairman, Committee on Research, Cincinnati General Hospital]. Title: The Therapeutic Effects of Total and Large Field Partial-Body Irradiation Followed by Infusion of Autologous Marrow in Humans. Document Type: Proposal. Date: July 1971

From: Evelyn V. Hess, M.D., Chairman, Faculty Committee on Research. To: Clifford G. Grulee, Jr., M.D., Dean, College of Medicine, University of Cincinnati. Subject: Therapeutic Effects of Total Body Irradiation Followed by Infusion of Autologous Marrow in Humans [forwarding of Faculty Committee on Research approval of proposal submitted by Silberstein and Saenger]. Document Type: Letter. Date: 3 August 1971

From: Evelyn V. Hess, M.D., Chairman, Faculty Committee on Research. To: Edward B. Silberstein, M.D., Associate Professor, Radioisotope Laboratory. Subject: The Therapeutic Effects of Total-Body Irradiation Followed by Infusion of Autologous Marrow in Humans [internal committee review of proposal submitted by Silberstein and Saenger]. Document Type: Letter. Date: 3 August 1971

From: Evelyn V. Hess, M.D., Chairman, Faculty Committee on Research. To: Eugene Saenger, M.D., Director, Radioisotope Laboratory. Subject: The Therapeutic Effects of Total and Large Field Partial-Body Irradiation Followed by Infusion of Autologous Marrow in Humans [internal committee review of proposal submitted by Silberstein and Saenger]. Document Type: Letter. Date: 3 August 1971

From: Clifford G. Grulee, Jr. (Dean, UCCM). To: Edward B. Silberstein and Eugene L. Saenger. Subject: Notification of FCR Approval of "Therapeutic Effect of Total-Body Irradiation Followed by Infusion of Autologous Marrow in Humans." Document Type: Letter. Date: 9 August 1971

From: Clifford G. Grulee, Jr., M.D., Dean [College of Medicine]. To: Dr. Edward B. Silberstein and Dr. Eugene L. Saenger, Dept. of Radiology, Radioisotope Laboratory, Cincinnati General Hospital. Subject: Therapeutic Effects of Total-Body Irradiation Followed by Infusion of Autologous Marrow in Humans [internal committee review of proposal submitted by Silberstein and Saenger]. Document Type: Letter. Date: 9 August 1971

From: Ralph E. Ballinger, Contracting Officer [J-4CM]. To: University of Cincinnati College of Medicine, Attn.: Eugene L. Saenger, M.D. Subject: Request Approval of Additional Equipment for Use Under Contract DASA 01-69-C-0131 [for sterile room, but not for analyzer of UV abs. metabolic products; funds commitment]. Document Type: Letter. Date: 10 August 1971

Authors: Edward B. Silberstein, M.D.; Eugene L. Saenger, M.D. Title: Appendix VIII, Revised Protocol, Approved August 1971. Protocol: The Therapeutic Effect of Total and Large Field Partial-Body Irradiation Followed by Infusion of Autologous Marrow in Humans [includes consent forms]. Document Type: Protocol. Date: August 1971

From: Ralph E. Ballinger, Contracting Officer. To: University of Cincinnati, Office of Controller: Attn.: Wilma H. Loichinger, Assistant Controller, Grants & Contracts. Subject: Letter Acknowledging Receipt of HEW Negotiation Agreement re: Contract DASA 01-69-C-0131 [regarding overhead rates; negotiation]. Document Type: Letter. Date: 8 September 1971

From: Lt. Col. John W. Cable, USAF, VC, Medical Directorate. To: Dr. Northrop. Subject: S. Auerbach Visit on 6 October 1971 About Contract DASA 01-69-C-0131. Document Type: Memorandum. Date: 6 October 1971

From: John W. Watson, [DNA] Contracting Officer. To: Record. Subject: *Washington Post* Request for Copy of Contract DASA 01-69-C-0131, University of Cincinnati. Document Type: Memorandum. Date: 6 October 1971

Author: Department of Defense. Title: Statement from DoD October 14, 1971. Subject: Department of Defense Contractual Arrangements with the University of Cincinnati in Connection with Whole-Body Radiation Research. Document Type: Fact Sheet. Date: 14 October 1971

From: Dr. E. L. Saenger Radioisotope Laboratory. To: Warren G. Bennis, President, University of Cincinnati. Subject: [a statement in regard to whole- and partial-body radiation therapy]. Document Type: Memorandum. Date: 19 October 1971

From: Eugene L. Saenger, M.D. To: Dr. William Rider, Princess Margaret Hospital. Subject: [inquiries regarding "The Symptomatic and Hematological Disturbance Following Total Body Radiation of 300-Rad Gamma-Ray Irradiation" and references]. Document Type: Letter. Date: 28 October 1971

DEFENSE SPECIAL WEAPONS AGENCY/ARMED FORCES RADIOBIOLOGY INSTITUTE 1944-1974 (CONTINUED)

Cincinnati General Hospital, Cincinnati, OH (continued)

Title: [justification for use of radiation as palliative therapy for advanced cancer]. Document Type: Report; Draft. Date: 29 October 1971

From: Edward B. Silberstein, M.D. To: Eugene L. Saenger, M.D. Subject: [psychological studies in whole-body radiation patients]. Document Type: Memorandum. Date: 1 November 1971

Author: E. L. Saenger, M.D. Title: Answers to Senator Gravel's Questions. Document Type: Report; Draft. Date: 2 November 1971

From: Eugene L. Saenger, M.D. Subject: [forwarding Gravel's questions and Saenger's answers to a third party]. Document Type: Memorandum. Date: 3 November 1971

Author: Eugene L. Saenger, M.D. Title: A Statement in Regard to Whole and Partial-Body Radiation Therapy for Palliation of Cancer Patients Carried Out at the University of Cincinnati College of Medicine and General Hospital. Document Type: Statement. Date: 3 November 1971

Author: E. B. Siberstein, M.D. Title: Evolution of Bone Marrow Transplantation in Total Body Irradiation Study at the University of Cincinnati. Document Type: Report; Excerpt. Date: 3 November 1971

From: Ruth V. Lindsey/per Eugene L. Saenger, M.D. To: Dr. Donald T. Chalkley, National Institutes of Health. Subject: [forwarding of material in regard to whole and/or partial-body radiation study at the request of Dr. Gall]. Document Type: Letter. Date: 4 November 1971

From: Eugene L. Saenger, M.D. To: Dr. Harold Perry, Department of Radiology, Sinai Hospital. Subject: [request for follow-up information on two 1960 patients; update on rebuttal for press reaction]. Document Type: Letter. Date: 4 November 1971

From: Dr. Clifford G. Grulee, Jr. To: Dr. Raymond Suskind, Chairman; Dr. Bernard Aron; Dr. Eugene Conway; Dr. Robert Daniels; Dr. Paul Herget; Dr. Evelyn Hess; Dr. Daniel Kline; Dr. Harvey Knowles; Dr. Alvin Mauer; Dr. Milton Orchin; Dr. Edward Pratt. Subject: Creation of Ad Hoc Committee to Review the Total Body Radiation Study [Dr. Saenger's research]. Document Type: Memorandum. Date: 12 November 1971

From: Dr. Clifford G. Grulee, Jr. [Dean, College of Medicine]. To: Dr. Raymond Suskind; Dr. Bernard Aron; Dr. Eugene Conway; Dr. Robert Daniels; Dr. Paul Herget; Dr. Evelyn Hess; Dr. Daniel Kline; Dr. Harvey Knowles; Dr. Alvin Mauer; Dr. Milton Orchin; Dr. Edward Pratt. Subject: [membership in an ad hoc committee to review the scientific content, methodology, and data treatment with respect to the total body radiation study]. Document Type: Memorandum. Date: 12 November 1971

From: Otha W. Linton, Director, Washington Office [American College of Radiology]. To: Senator Mike Gravel. Subject: [letter responding to Senator Gravel's request that the American College of Radiology investigate Saenger's research program]. Document Type: Letter. Date: 24 November 1971

From: Eugene L. Saenger, M.D., Professor of Radiology, Director, Radioisotope Laboratory. To: Dr. John Northrop, Deputy Director, Science and Technology, Defense Nuclear Agency. Subject: [comments on the draft of statement of Dr. John A. Northrop, Deputy Director (Science & Technology), Defense Nuclear Agency, before the Subcommittee on Health, Committee on Labor and Public Welfare, US Senate, November 1971]. Document Type: Letter. Date: 26 November 1971

Author: Dr. John Northrop, Defense Nuclear Agency. Title: Statement of Dr. John A. Northrop, Deputy Director (Science & Technology), Defense Nuclear Agency, Before the Subcommittee on Health Committee on Labor and Public Welfare, US Senate, November 1971 [includes consent form and budget information]. Document Type: Statement; Draft. Date: November 1971

Title: Rebuttal to Press Articles About UCCM, DoD, Cancer Treatment. Document Type: Statement. Date: November 1971

From: Eugene L. Saenger, M.D. Subject: An Interview with Dr. Silberstein and Mr. Motter and Dr. Caper Representing Senator Kennedy. Document Type: Memorandum; Notes. Date: 6 December 1971

DEFENSE SPECIAL WEAPONS AGENCY/ARMED FORCES RADIOBIOLOGY INSTITUTE 1944-1974 (CONTINUED)

Cincinnati General Hospital, Cincinnati, OH (continued)

From: Dr. E. B. Silberstein, M.D. Subject: Meeting with Mr. Motter, Staff of Senator Edward Kennedy, Dr. Caper, Staff of Health, Education and Welfare, Regarding Conduct of Total Body Irradiation Study. Document Type: Memorandum; Notes. Date: 6 December 1971

From: Eugene L. Saenger, M.D. To: Dr. Edward Gall [VP Medical Affairs, UCCM]. Subject: [visit to evaluate the problems of the whole-body radiation study]. Document Type: Letter. Date: 7 December 1971

From: Eugene L. Saenger, M.D. To: Evelyn Hess, M.D. [Faculty Committee on Research]. Subject: [visit to evaluate the problems of the whole-body radiation study]. Document Type: Letter. Date: 7 December 1971

From: Eugene L. Saenger, M.D. To: Dr. Raymond Suskind [Director, Institute of Environmental Health, Kettering Laboratory]. Subject: [visit to evaluate the problems of the whole-body radiation study]. Document Type: Letter. Date: 7 December 1971

From: Eugene L. Saenger, M.D., Professor of Radiology, Director, Radioisotope Laboratory. To: Dr. Edward A. Gall, Vice President for Medical Affairs, University of Cincinnati Medical Center. Subject: [the advisability of having patients who have been treated with whole- or partial-body radiation interviewed by representatives of Senator Kennedy]. Document Type: Letter. Date: 11 December 1971

Authors: Eugene L. Saenger, M.D. (with others). Title: Progress Report: Whole and Partial-Body Radiation Therapy for Palliation of Cancer Patients Carried Out at the University of Cincinnati College of Medicine and General Hospital [includes two versions with the same date]. Document Type: Report; Excerpt. Date: 13 December 1971

From: Ben I. Friedman, M.D., Professor of Radiology and Medicine, Head, Section of Nuclear Medicine, Acting Chairman, Department of Radiology. To: Eugene L. Saenger, M.D. Subject: [defending "informed consent" by description of the briefing of patients considered for whole- or partial-body radiation on the type of treatment and forms of therapy that they might receive]. Document Type: Letter. Date: 15 December 1971

Title: Congressional Record, Proceedings and Debates of the 92nd Congress, First Session, December 13, 1971 to December 17, 1971. Journal: *Congressional Record*, vol. 117, issue 36. Document Type: Journal Article; Excerpt. Date: 15 December 1971

Title: [Congressional Record excerpt. Proceedings and Debates of the 92nd Congress, First Session, December 13, 1971. Page 47051 only]. Journal: *Congressional Record.* Document Type: Journal Article; Excerpt. Date: 15 December 1971

Title: Discussion of DoD's Contractual Arrangement with the University of Cincinnati in connection with Whole-Body Radiation Research [includes *Congressional Record*—Senate, dated 15 December 1971]. Document Type: Fact Sheet. Date: 15 December 1971 est.

From: Eugene L. Saenger, M.D. To: Dr. Charles Barrett, Department of Surgery, Cincinnati General Hospital. Subject: [review of the letter of December 13, 1971 from Senator Edward Kennedy to Dr. Warren Bennis]. Document Type: Letter. Date: 17 December 1971

Author: Evelyn V. Hess, M.D., Chairman, Faculty Committee on Research. Title: Appendix I [to Suskind report]: Historical Review of the Total Body Irradiation Project and the Faculty Research Committee Reviews. Document Type: Appendix/Attachment. Date: 20 December 1971

From: [Unknown]. To: Mr. Arthur Newmyer, Newmyer Associates. Subject: [letter enclosing material concerning the congressional inquiries of Senator Kennedy and Senator Gravel regarding UCCM and Saenger research]. Document Type: Letter; Excerpt. Date: 20 December 1971

From: Mike Gravel [Senator, Alaska]. To: Dr. McConnell [President, American College of Radiology]. Subject: Letter from Senator Mike Gravel to Dr. McConnell Concerning Radiation Therapy Project, University of Cincinnati Medical Center. Document Type: Letter. Date: 1971

DEFENSE SPECIAL WEAPONS AGENCY/ARMED FORCES RADIOBIOLOGY INSTITUTE 1944-1974 (CONTINUED)

Cincinnati General Hospital, Cincinnati, OH (continued)

Authors: [three members of the University of Cincinnati Junior Faculty Association]. Title: A Report to the Campus Community. Subject: [radiation experiments at University of Cincinnati]. Document Type: Report. Date: 1971

Authors: E. B. Silberstein; I-Wen Chen; E. L. Saenger; J. G. Kereiakes. Title: "Cytologic-Biochemical Radiation Dosimeters in Man." Book: *Biochemical Indicators of Radiation Injury in Man.* Document Type: Chapter. Date: 1971

Title: University of Cincinnati Medical Center Faculty Committee on Research Voluntary Consent Statement [for radiation of the lower body, with investigatory and witness signatures]. Document Type: Form. Date: 1971

Authors: Eugene L. Saenger, M.D. et al. Title: Radiation Effects in Man: Manifestations and Therapeutic Efforts, 1 May 1970 through 30 April 1971. Document Type: Report. Date: 1971

Title: Appendix II [to Suskind report]: Letters from 1966 to 1971 Showing the Reviews and Recommendations of the Faculty Committee on Research Relating to the Research Proposals Submitted by Dr. Saenger. Document Type: Appendix/Attachment. Date: 1971

From: Dr. John Northrop, Deputy Director, Science & Technology [DNA]. To: Eugene L. Saenger, M.D. Subject: [plans for Senate hearings in front of Senator Kennedy's committee]. Document Type: Letter. Date: 19 November 1971

Title: University of Cincinnati Medical Center, Faculty Committee on Research, Voluntary Consent Statement (Procedure: Bone Marrow Transplantation). Document Type: Form. Date: 1971 est.

Title: Faculty Committee on Research, Voluntary Consent Statement. (Procedure: Radiation of the Whole-Body). Document Type: Form. Date: 1971 est.

From: J-4CM, John W. Watson, Chief, Contract Division. To: COMP, STAP. Subject: Negotiated Amount of Modification No. DASA 01-69-C-0131-P00003 with the University of Cincinnati College of Medicine [includes copy of budget provided by Saenger, negotiation, funds commitment]. Document Type: Memorandum; Budget; Excerpt. Date: 1971 est.

Title: Individual Procurement Action Report [for Contract DASA 01-69-C-0131-P00003, Continuation of Study of Radiation Effects in Man]. Document Type: Report. Date: 1971 est.

Author: Signed by John W. Watson, Contracting Officer. Title: Contract Distribution List [for Contract No. DASA 01-69-C-0131-P00003] Subject: [distribution]. Document Type: List. Date: 1971 est.

Title: Tables, Whole-Body and/or Partial-Body Study (Survival Tables, Incidence of Nausea and Vomiting, etc.). Document Type: Report; Chart; Draft. Date: 1971 est.

Authors: Eugene L. Saenger, M.D. et al. Title: Radiation Effects in Man: Manifestations and Therapeutic Efforts, 01 May 1969 through 30 April 1970. Document Type: Report. Date: 1971 est.

Authors: Eugene L. Saenger, M.D. et al. Title: Radiation Effects in Man: Manifestations and Therapeutic Efforts, 1 May 1970–30 April 1971. Document Type: Report; Draft. Date: 1971 est.

From: Senator Gravel [Alaska]. To: Dr. Steinfelder. Subject: [letter circulated by Senator Gravel questioning the radiation therapy projects at the University of Cincinnati College of Medicine]. Document Type: Letter; Excerpt. Date: 1971 est.

Title: Patient Dosimetry [includes charts and illustrations]. Document Type: Notes. Date: 1971 est.

Title: [the University of Cincinnati College of Medicine's program for total-body and partial-body exposure of patients for the treatment of cancer; includes notations for slide display]. Document Type: Paper. Date: 1971 est.

From: David K. Lyon, LTC, USA, Technical Operations Officer. To: Record. Subject: GAO Investigation of DNA Contract (DASA 01-69-C-0131) with University of Cincinnati. Document Type: Memorandum. Date: 12 January 1972

Cincinnati General Hospital, Cincinnati, OH (continued)

From: Raymond R. Suskind, M.D., Chairman, Ad Hoc Committee. To: Clifford G. Grulee, Jr., M.D., Dean, College of Medicine, University of Cincinnati. Subject: Transmission of Ad Hoc Committee [Suskind] Report, Reviewing the Total Body Irradiation Study by Dr. Saenger. Document Type: Letter. Date: 14 January 1972

From: Robert L. Bachman, Property Administrator (ONR Resident Representative). To: Director, Defense Nuclear Agency (LGCM/J.W. Watson). Subject: Contract No. DASA 01-69-C-0131 with the University of Cincinnati [item inventory, ref: ONR Laf/657:vm Cinci-0131 18 July 1972]. Document Type: Memorandum. Date: 18 January 1972

Authors: Mike Gravel [Senator, Alaska]. Title: Congressional Record, Proceedings and Debates of the 92d Congress, 2nd Session, January 19, 1972 to January 25, 1972, Senate, Body Radiation Program. Journal: *Congressional Record*, vol. 118, issue 1. Document Type: Journal Article. Date: 19 January 1972

From: Todd H. Bogart, Vice-President, Junior Faculty Association. To: [open letter to campus community]. Subject: Disclaimer to Report Published by Three Members of the Junior Faculty Association Re: Dr. Saenger's Research Projects. Document Type: Statement. Date: 25 January 1972

From: Eugene L. Saenger, M.D. To: Mr. Mike Gertner, Administrative Aide, Senator William Saxbe. Subject: [Office of Senator Kennedy's interest in studies on whole- and partial-body radiation for the treatment of cancer and the investigation of radiation effects]. Document Type: Letter. Date: 29 January 1972

Author: Ad Hoc Review Committee of the University of Cincinnati. Title: The Whole-Body Radiation Study at the University of Cincinnati: A Report to the Dean of the College of Medicine [Suskind report]. Document Type: Report. Date: January 1972

Author: Ad Hoc Review Committee of the University of CIncinnati. Title: The Whole-Body Radiation Study at the University of Cincinnati: A Report to the Dean of the College of Medicine [Suskind report, including transmittal memorandum, appendices 1-9, and press release]. Document Type: Report; Appendix/Attachment. Date: January 1972

Title: Questions from the Committee to Appendix VI to the University of Cincinnati Ad Hoc Committee Report, January 1972 [includes Dr. Saenger's answers to questions related to funding (missing). Document Type: Appendix/Attachment. Date: January 1972

From: Eugene L. Saenger, M.D. To: Col. John Cable, Defense Nuclear Agency. Subject: DASA 01-69-C-0131. Document Type: Letter. Date: 4 February 1972

Title: Meeting with Mr. Robert Murphy and Mr. Myrton Stewart [GAO] and E. L. Saenger, Mr. Vern Rolf, and Ruth V. Lindsey (UCCM). Document Type: Transcript. Date: 4 February 1972

From: Eugene L. Saenger, M.D. To: Clifford G. Grulee, Jr., M.D., Dean, College of Medicine, UC. Subject: Contract Extension, Grant Renewals and Publicity [reply from Grulee to Gall (FCR) attached]. Document Type: Letter; Memorandum. Date: 9 February 1972

From: Eugene L. Saenger, M.D. To: Mr. Robert Murphy (GAO). Subject: Information Concerning Informed Consent. Document Type: Letter. Date: 10 February 1972

Title: A Critique of "A Report to the Campus Community" — Statement of Three Members of the Junior Faculty Association. Document Type: Report. Date: 10 February 1972

Author: E. L. Saenger. Title: Report of Conference with Messrs. Myrton Tom Stewart and Robert Murphy of the General Accounting Office (GAO), Friday February 4, 1972. Document Type: Report; Transcript. Date: 11 February 1972

From: Dr. Clifford G. Grulee, Jr. To: Eugene L. Saenger, M.D., Professor of Radiology and Director, Radioisotope Laboratory. Subject: Letter to Acknowledge the Budget for the Contract Titled "Therapeutic Effect of Total Body Irradiation Followed by Infusion of Autologus Marrow in Humans." Document Type: Letter. Date: 15 February 1972

DEFENSE SPECIAL WEAPONS AGENCY/ARMED FORCES RADIOBIOLOGY INSTITUTE 1944-1974 (CONTINUED)

Cincinnati General Hospital, Cincinnati, OH (continued)

From: Warren Bennis, President, University of Cincinnati. To: Edward M. Kennedy, Chairman, Subcommittee on Health, Committee on Labor and Public Welfare. Subject: Response to letter of February 3, 1972 Regarding Requests for Reports on Total Body Irradiation Study. Document Type: Letter. Date: 16 February 1972

Author: [Saenger]. Title: Questions from the Committee [regarding whole-body irradiation studies]. Document Type: Notes. Date: February 1972 est.

From: Robert W. McConnell, M.D., President, American College of Radiology. To: The Honorable Mike Gravel. Subject: Response to Request by Sen. Gravel for Further Investigation by Committee from American College of Radiology (ACR). Document Type: Letter. Date: 7 March 1972

From: Edward B. Silberstein. To: Evelyn Hess, Chairman, Faculty Committee on Research. Subject: Submission of Protocol: Evaluation of the Therapeutic Effectiveness of Total- and Partial-Body Irradiation as Compared to Chemotherapy in Humans with Carcinoma of Lung or Colon [second submission; title page has wide field]. Document Type: Memorandum; Proposal. Date: 4 April 1972

Author: Capt. Myron I. Varon, MC, USN, Surgeon, AFRRI, DNA. Title: Minutes of the Twentieth Meeting, AFRRI Board of Governors, 13 April 1972. Document Type: Minutes; Excerpt. Date: 13 April 1972

From: Eugene L. Saenger, M.D. To: Director, Defense Nuclear Agency. Subject: Withdrawal of Contractor's Letter in Regard to FY 74 Due to Cancellation of Contract. Document Type: Letter. Date: 26 April 1972

From: Edward A. Gall [Vice President, Director, University of Cincinnati Medical Center]. To: Eugene L. Saenger. Subject: President Bennis' Letter Describing His Conclusion Regarding Whole-Body Irradiation Experimentation Forwarded to Saenger. Document Type: Memorandum. Date: 1 May 1972

From: Edward B. Silberstein. To: Faculty Committee on Research. Subject: Submission of Third Revision of "Evaluation of the Therapeutic Effectiveness of Wide Field Radiotherapy as Compared to Chemotherapy in Humans with Carcinoma of the Lung and Colon. Document Type: Memorandum. Date: 22 May 1972

Author: Evelyn V. Hess, M.D., Chairman, Faculty Committee on Research. Subject: Faculty Committee on Research Meeting Regarding Evaluation of the "Therapeutic Effectiveness of Total and Partial-Body Irradiation as Compared to Chemotherapy in Humans with Carcinoma of the Lung or Colon." Document Type: Notes. Date: May 1972

Author: Evelyn V. Hess, M.D., Chairman, Faculty Committee on Research. Subject: Meeting of the Faculty Committee on Research, Held on June 12, 1972, Reviewing Saenger's Proposal for Total Body Radiation Research to the National Cancer Institute. Document Type: Minutes. Date: 15 June 1972

Authors: James G. Kereiakes, Ph.D.; William Van de Riet, Ph.D.; Clifford Born, M.S.; Carol Ewing; Edward Silberstein, M.D.; Eugene L. Saenger, M.D. Title: Active Bone-Marrow Dose Related to Hematological Changes in Whole-Body and Partial-Body 60-Co Gamma Radiation Exposures: Journal: *Radioiology*, vol. 103. Document Type: Journal Article. Date: June 1972

Title: Congressional Record: Senate [discussion of amendment to military procurement authorization bill regarding experiments involving humans subjects; cases discussed include UCCM and other DoD research projects]. Journal: *Congressional Record*, vol. 1, issue: Aug 1972, pp. 26229 - 26240. Document Type: Journal Article; Excerpt. Date: 1 August 1972

Title: Congressional Record: Senate [regarding amendment to military procurement authorization bill to allow the use of federal funds for experiments involving humans subjects after obtaining informed consent; cases cited include Saenger research at UCCM]. Journal: *Congressional Record*, vol. 1, issue Aug. 1972. Document Type: Journal Article; Excerpt. Date: 1 August 1972

From: Evelyn V. Hess, M. D., Chairman, Faculty Committee on Research. To: Clifford G. Grulee, Jr., M.D., Dean, College of Medicine. Subject: Approval of the Radiation Project (Evaluation of the Therapeutic Effectiveness of Wide-

Cincinnati General Hospital, Cincinnati, OH (continued)

Field Radiotherapy as Compared to Chemotherapy in Humans with Carcinoma of the Lung or Colon) as a Grant Application to the National Cancer Institute. Document Type: Memorandum. Date: 28 August 1972

From: Edward B. Silberstein. To: Faculty Committee on Research. Subject: Revised Proposal: "Evaluation of the Therapeutic Effectiveness of Wide Field Radiotherapy as Compared to Chemotherapy in Humans with Carcinoma of the Lung or Colon" (Fourth Revision) and Faculty Committee on Research Correspondence Re: This Proposal. Document Type: Letter; Memorandum. Date: August 1972

From: Edward B. Silberstein, M.D. To: Eugene L. Saenger, M.D. Subject: Progress of the Research Grant Proposal Entitled "Radiation vs. Chemotherapy for Metastatic Cancer." Document Type: Memorandum. Date: 12 September 1972

From: Eugene L. Saenger, M.D. To: John W. Watson, Contracting Officer [Logistics Headquarters, DNA]. Subject: Contract Budget Overruns [enclosing work sheets developed by Mr. Homer Denny, an auditor with the Columbus, Ohio, Audit Agency of DHEW covering three contract years from 6/15/69 through 3/31/72, and DNA reply]. Document Type: Letter; Appendix/Attachment. Date: 30 October 1972

Authors: Eugene L. Saenger, M.D. et al. Title: Radiation Effects in Man: Manifestations and Therapeutic Efforts, 1 April 1971 through 31 March 1972. Document Type: Report. Date: 1972

Author: Dr. Saenger. Title: Unattributed Summary Transcript of GAO Investigators Interview with Dr. Saenger on February 7, 1972 [includes summary and questions addressing DoD funding (missing)]. Document Type: Transcript. Date: 1972 est.

From: Asher Tenner, Regional Audit Director, HEW Audit Agency. To: Headquarters, Defense Nuclear Agency. Subject: Miscellaneous Correspondence Pertaining to Fiscal Matters [contract audit closing statement for DASA 01-69-C-0131]. Document Type: Letter. Date: 29 January 1973

Authors: Eugene L. Saenger, M.D. et al. Title: Whole-Body and Partial-Body Radiotherapy of Advanced Cancer. Journal: *The American Journal of Roentgenology, Radium Therapy and Nuclear Medicine*, vol. CXVII, issue 3. Document Type: Journal Article. Date: March 1973

Title: Contract Administration Completion Record [for Contract No. DASA 01-69-C-0131-P00003]. Document Type: Form; Contract. Date: 31 May 1973

Authors: Eugene L. Saenger, M.D. et al. Title: Whole-Body and Partial-Body Radiotherapy of Advanced Cancer. Document Type: Chart. Date: 1973 est.

From: Wilma H. Loichinger, Assistant Controller—Grants & Contracts. To: Contracting Officer, Defense Nuclear Agency. Subject: Letter Concerning Billing to Collect the Final Payment on Contract DASA 01-69C-0131. Document Type: Letter. Date: 4 February 1974

From: Eugene L. Saenger, M.D. To: Contracting Officer. Subject: DASA 01-69-C-0131 (June 15, 1969–March 31, 1972). Document Type: Letter. Date: 22 May 1974

Title: Contract Completion Statement [for Contract No. DASA 01-69-C-0131-P00003]. Document Type: Form; Contract. Date: 23 July 1974

Author: Edward B. Silberstein, M.D., E. L. Saenger Radioisotope Laboratory. Title: The Political and Ethical Investigation of Human Research: A Case Study. Document Type: Report. Date: 1976 est.

From: H. D. Wisely, RADM, USN, Director. To: Dr. Joseph A. Steger, Office of the President, University of Cincinnati. Subject: A Process to Resolve Issues Relating to Human Radiation Experiments Conducted or Sponsored by the Federal Government. Document Type: Letter. Date: 10 March 1994

From: Comptroller General of the United States. To: Senator Edward M. Kennedy, Chairman, Subcommittee on Health, Committee on Labor & Public Welfare. Subject: Documents Relating to GAO Report: 1) the Whole-Body

DEFENSE SPECIAL WEAPONS AGENCY/ARMED FORCES RADIOBIOLOGY INSTITUTE 1944-1974 (CONTINUED)

Cincinnati General Hospital, Cincinnati, OH (continued)

Irradiation Program at the University of Cincinnati Medical Center and 2) the Policy of the Department of Defense Regarding the Protection of Humans Used in Medical Research Projects Under Contract. Document Type: Letter. Date: Unknown

From: Robert W. McConnell, M.D., President American College of Radiology. To: Mike Gravel [Senator, Alaska]. Subject: [response to request to investigate the whole-body radiation therapy project being conducted by Dr. Eugene L. Saenger and his colleagues at the University of Cincinnati College of Medicine]. Document Type: Letter. Date: Unknown

Authors: James G. Kereiakes; Edward B. Silberstein; J. Winston Rogers; Eugene L. Saenger. Title: Bone Marrow Dosimetry in a Co-60 Irradiated Tissue-Equivalent Human Phantom [includes cover letter]. Document Type: Letter; Abstract. Date: Unknown

Author: [Eugene L. Saenger, M.D.]. Title: [a conversation with Dr. Suskind regarding the whole-body radiation project and Faculty Committee on Research]. Document Type: Notes. Date: Unknown

Author: Eugene L. Saenger. Title: Effects of Total- and Partial-Body Therapeutic Irradiation in Man. Document Type: Chapter. Date: Unknown

Author: E. L. Saenger. Title: Progress Report—Whole and Partial-Body Radiation Therapy for Palliation of Cancer Patients Carried Out at the University of Cincinnati College of Medicine and General Hospital. Document Type: Report; Draft. Date: Unknown

Author: Eugene L. Saenger. Title: Radiation Effects in Man (A Collection of Articles from Various Journals). Document Type: File. Date: Unknown

From: E. B. Silberstein, M.D. To: Eugene L. Saenger, M.D. Subject: [private patient's interest in becoming part of irradiation study]. Document Type: Memorandum. Date: Unknown

From: Bill Wickens. To: [Record]. Subject: UC Cancer Research Project Investigation. Document Type: Memorandum. Date: Unknown

Title: Three Consent Forms: Consent for Special Study and Treatment (1965); University of Cincinnati Medical Center Faculty Committee on Research Voluntary Consent Statement [two versions, undated]. Document Type: Form. Date: Unknown

Jefferson Davis Hospital, Houston, TX

Start Date	Number	Title
1952	**DNA02**	**Influence of total body irradiation**

(For abstract and documentation, see Baylor University College of Medicine, Houston, TX.)

National Naval Medical Center, Bethesda MD

Start Date	Number	Title
Unknown	**DNA07**	**Scintigraphy to detect early disease of the hip**

(For abstract and documentation, see Armed Forces Radiobiology Research Institute, Bethesda, MD.)

DEFENSE SPECIAL WEAPONS AGENCY/ARMED FORCES RADIOBIOLOGY INSTITUTE 1944-1974 (CONTINUED)

New York University Medical Center, Institute of Environmental Medicine, New York, NY

Start Date	Number	Title
Unknown	**DNA12**	**Short lived nuclides in the food chain and man**

Abstract: From a presently undetermined date until 1966, researchers at the New York University Medical Center, Institute of Environmental Medicine in New York, NY, evaluated potassium iodide (KI) in suppressing thyroidal iodine-131 (I-131) uptake. The object of the study was to investigate the efficacy of KI in suppressing thyroidal I-131 uptake as a means of reducing the risk of thyroid damage due to single massive exposures to this isotope. Because exposure might be unavoidable in the event of a nuclear accident, researchers sought a prophylactic procedure to minimize or prevent absorption of radioiodine by the thyroid. Sixty-two healthy volunteers participated. For all participants, the percent thyroidal I-131 accumulation was determined twenty-four hours after the administration of a standard dose of 1.5 nanocuries I-131 dissolved in 10.0 milliliters of water. The thyroid dose for 30 percent thyroidal uptake of I-131 was 6.8 millirems per 1.5 nanocuries. Determinations of protein-bound iodine (PBI) and I-131 labeled triiodothyronine resin uptake were also made. Forty-one of the original volunteers then participated in a test for the effect of KI administration on thyroidal radioiodine accumulation. These participants received doses of KI ranging from 5 to 1,000 milligrams either one hour before, with, or at specified times following administration of I-131. One or two days later, an additional dose of 1.5 to 5.0 nanocuries of I-131 was administered without additional doses of KI. The 24-hour uptake was again measured to evaluate the suppression. Researchers felt that prophylactic administration of 100 to 200 milligrams of KI in anticipation of radioiodine exposure prevented thyroid uptake and reduced the radiation dose by more than 98 percent.

Documents: Authors: Merril Eisenbud; McDonald E. Wrenn. Title: Short Lived Nuclides in the Food Chain and Man. Document Type: Report. Date: November 1966

From: William N. Rom, M.D., MPH. To: Lawrence M. Bates. Title: Semiannual Historical Report, Headquarters, Field Command, The Armed Forces Special Weapons Project; Sandia Base, Albuquerque, New Mexico, 01 July 1954–31 December 1954 [research related to "Short Lived Nuclides in the Food Chain and Man"] Document Type: Letter. Date: 14 September 1994

North Carolina Baptist Hospital, Winston-Salem, NC

Start Date	Number	Title
1972	**DNA11**	**Basic principles of pancreatic scanning**

(For abstract and documentation, see Bowman Gray School of Medicine, Winston-Salem, NC.)

Sloan-Kettering Institute for Cancer Research, New York, NY

Start Date	Number	Title
1954	**DNA01**	**Post-irradiation syndrome in man**

(For further information, see Chapter 2—"Total-Body and Partial-Body Irradiation Studies.")

DEFENSE SPECIAL WEAPONS AGENCY/ARMED FORCES RADIOBIOLOGY INSTITUTE 1944-1974 (CONTINUED)

Sloan-Kettering Institute for Cancer Research, New York, NY (continued)

Documents:

Author: James J. Nickson, M.D. Title: Abstract of: Study of the Post-Irradiation Syndrome in Humans [includes quarterly report to the AFSWP, with distribution list]. Document Type: Report; Abstract; Excerpt. Date: 1 March 1953

Authors: James J. Nickson, M.D.; Henry J. Koch, Jr., M.D. Title: A Proposal for the Study of the Post-Irradiation Syndrome in Humans. Document Type: Proposal. Date: December 1953

From: The Chief, Armed Forces Special Weapons Project. To: Surgeon General, Department of the Army. Subject: Request for Sponsoring a Study of the Post-Irradiation Syndrome in Humans at the Sloan-Kettering Institute for Cancer Research. Document Type: Memorandum. Date: February 1954

From: Maj. John A. Hilcken, MSC. To: Dr. Bayne-Jones. Subject: Proposal for Study of Post-Irradiation Syndrome in Man at Sloan-Kettering Institute, Requested for 1 March 54–30 April 55. Document Type: Memorandum. Date: 3 March 1954

From: S. Bayne-Jones, M.D. To: Maj. John A. Hilcken, MSC. Subject: Application (via AFSWP) of Dr. James Nickson and Dr. Henry J. Koch, Jr., Sloan-Kettering Institute for Cancer Research, New York City, for a Contract to Support a "Study of the Post-Irradiation Syndrome in Humans," for 1 March 1954–30 April 1955. Document Type: Memorandum. Date: 8 March 1954

From: Lt. Col. Tyron E. Huber, Medical Corps. To: Comptroller, OTSG. Subject: Request for Allotment. Document Type: Memorandum. Date: 12 March 1954

To: James J. Nickson, M.D. Subject: Memo Draft Which Includes Contract Number and Duration. Document Type: Memorandum. Date: 15 March 1954

From: Lt. Col. Tyron E. Huber, Medical Corps. To: James J. Nickson, M.D. Subject: Notification of Approval of the Proposal Submitted by Drs. Nickson and Koch (to Study Post-Irradiation Syndrome in Man) for AFSWP Support. Document Type: Letter. Date: 15 March 1954

From: Lt. Col. Tyron E. Huber, Medical Corps. To: Contracting Officers, OTSG. Subject: New Research Contract No. DA-49-007-M.D.-533 (OI No. 144-54). Document Type: Memorandum. Date: 30 March 1954

Authors: James J. Nickson, M.D.; Henry J. Koch, Jr., M.D. Title: Study of the Post-Irradiation Syndrome in Humans. Progress Report for Period 1 April 1954–30 June 1954. Document Type: Report. Date: 10 July 1954

From: Maj. John A. Hilcken, MSC. To: Stanhope Bayne-Jones, M.D. Subject: Renewal of Contract DA-49-007-M.D.—533. Document Type: Memorandum. Date: 1 August 1954

From: Maj. John A. Hilcken, MSC. To: C. P. Rhoads, M.D. Subject: Acknowledgement of Receipt of Progress Report for Contract DA-49-007-M.D.-533 and Update on Policy Changes Concerning Submission of Reports. Document Type: Letter. Date: 16 August 1954

From: Col. R. P. Mason, MC. To: Chief, Armed Forces Special Weapons Project. Subject: Transmittal of Progress Reports. Document Type: Memorandum. Date: 17 August 1954

From: Maj. Jesse W. West, MSC. To: Contracting Officer, OTSG. Subject: Invoice. Document Type: Memorandum. Date: 30 August 1954

From: Maj. Jesse W. West. To: Contracting Officer, OTSG. Subject: Invoice. Document Type: Memorandum. Date: 16 December 1954

From: Col. R. P. Mason, MC. To: Chief, Armed Forces Special Weapons Project. Subject: Progress Report, AFSWP No. 742. Document Type: Memorandum. Date: 10 January 1955

From: C. P. Rhoads, M.D. To: Maj. John A. Hilcken, MSC. Subject: The Submission of Progress Report #3 for the Project Conducted Under Contract No. DA-49-007-M.D.-533. Document Type: Letter; Form; Routing Slip. Date: 20 June 1955

DEFENSE SPECIAL WEAPONS AGENCY/ARMED FORCES RADIOBIOLOGY INSTITUTE 1944-1974 (CONTINUED)

Sloan-Kettering Institute for Cancer Research, New York, NY (continued)

Author: Col. R. P. Mason, MC. Title: Post-Irradiation Syndrome in Humans. Document Type: Report. Date: 22 June 1955

From: C. P. Rhoads, M.D. To: Maj. John A. Hilcken, MSC. Subject: Renewal Proposal for Contract No. DA-49-007-M.D.-533. Document Type: Letter. Date: 22 June 1955

Author: James J. Nickson, M.D. Title: A Proposal for the Continuation of the Study of the Post-Irradiation Syndrome in Humans. Document Type: Proposal. Date: June 1955

From: Col. Irving L. Branch, USAF. To: The Surgeon General, Department of the Army. Subject: Continuation of Contract at the Sloan-Kettering Institute for Cancer Research. Document Type: Memorandum; Routing Slip. Date: 29 July 1955

From: Maj. John A. Hilcken, MSC. To: The Chief, Armed Forces Special Weapons Project. Subject: Continuation of Contract of the Sloan-Kettering Institute of Cancer Research. Document Type: Memorandum. Date: 9 August 1955

From: Maj. John A. Hilcken, MSC. To: C. P. Rhoads, M.D. Subject: Renewal of Contract No. DA-49-007-M.D.-533 with Sloan-Kettering Institute for Cancer Research. Document Type: Letter. Date: 9 August 1955

From: Maj. John A. Hilcken, MSC. To: Comptroller, OTSG. Subject: Amendment of Contract No. DA-49-007-M.D.-533—the Sloan-Kettering Institute for Cancer Research. Document Type: Memorandum. Date: 12 August 1955

From: Maj. John A. Hilcken, MSC. To: Contracting Officer, OTSG. Subject: New Research Contract No. DA-49-007-M.D.-669. Document Type: Memorandum. Date: 12 August 1955

From: Maj. John A. Hilcken, MSC. To: Dr. Stella Leche Deignan. Subject: The Extension of Contract No. DA-49-007-M.D.-533 and the Renewed Contract Identification No. DA-49-007-M.D.-669. Document Type: Letter. Date: 23 August 1955

From: Lt. Col. Tyron E. Huber, Medical Corps. To: Contracting Officer, OTSG. Subject: Continuation of Contract No. DA-49-007-M.D.-533—the Sloan-Kettering Institute for Cancer Research. Document Type: Memorandum. Date: 2 September 1955

From: Maj. John A. Hilcken, MSC. To: Contracting Officer, OTSG. Subject: Contract No. DA-49-007-M.D.-533 - The Sloan-Kettering Institute for Cancer Research. Document Type: Memorandum. Date: 12 September 1955

From: Maj. John A. Hilcken. To: Contracting Officer. Subject: Contract No. DA-49-007-M.D.-669—The Sloan-Kettering Institute for Cancer Research. Document Type: Memorandum. Date: 12 September 1955

From: Lt. Col. W. F. Lawrence, MSC. To: Contracting Officer, OTSG. Subject: Contract No. DA-49-007-M.D.-533—The Sloan-Kettering Institute for Cancer Research (Report on Audit of Total Costs and Supplemental Agreement). Document Type: Memorandum. Date: 28 October 1955

From: Maj. John A. Hilcken, MSC. To: Contracting Officer, OTSG. Subject: Decreased Funding for Contract No. DA-49-007-M.D.-533—The Sloan-Kettering Institute for Cancer Research. Document Type: Memorandum. Date: 1 November 1955

From: Maj. John A. Hilcken, MSC. To: Mrs. Lamasure. Subject: Non-Receipt of Report from Dr. Nickson for Contract No. DA-49-007-M.D.-669. Document Type: Memorandum. Date: 27 November 1955

Author: James J. Nickson, M.D. Title: Study of the Post-Irradiation Syndrome in Humans, Interim Report, Accompanying Renewal Proposal, October 1958 [includes annual report and quarterly reports]. Document Type: Report. Date: 1955 est.

Authors: James J. Nickson, M.D.; Henry J. Koch, Jr., M.D. Title: Study of the Post-Irradiation Syndrome in Humans. Progress Report for Period 1 April 1954–31 March 1955. Document Type: Report. Date: 1955 est.

Author: Col. R. P. Mason, Medical Corps. Title: Study of Post-Irradiation Syndrome in Humans. Document Type: Report. Date: 1 January 1956

DEFENSE SPECIAL WEAPONS AGENCY/ARMED FORCES RADIOBIOLOGY INSTITUTE 1944-1974 (CONTINUED)

Sloan-Kettering Institute for Cancer Research, New York, NY (continued)

Title: Contractor's Statement of Contingent or Other Fees for Contract No. DA-49-007-M.D.-755. Document Type: Form; Statement. Date: 1 January 1956

From: Maj. John A. Hilcken, MSC. To: Mrs. Lamasure. Subject: Contract No. M.D.-504 and M.D.-669 (Contract Renewal). Document Type: Memorandum. Date: 27 February 1956

From: Maj. John A. Hilcken, MSC. To: James J. Nickson, M.D. Subject: Non-Receipt of Report for Contract No. DA-49-007-M.D.-669. Document Type: Letter. Date: 8 May 1956

Author: James J. Nickson, M.D. Title: Annual Report, Post-Irradiation Syndrome in Humans, Period of Report: 1 April 1955–31 March 1956. Document Type: Report. Date: May 1956

From: Buhla M. Hill for Maj. John A. Hilcken, MSC. To: Lt. Col. Louis E. Browning. Subject: Annual Report for Contract No. DA-49-007-M.D.-669. Document Type: Letter. Date: 12 June 1956

From: C. P. Rhoads, M.D. To: Maj. John A. Hilcken, MSC. Subject: Submission of Renewal Proposal for the Continuation of the Study of the Post-Irradiation Syndrome in Humans. Document Type: Letter. Date: 13 June 1956

From: Lt. Col. F. W. Timmerman, MC. To: Chief, Armed Forces Special Weapons Project. Subject: Proposal for the Continuation of Research Study (Sloan-Kettering Institute for Cancer Research). Document Type: Memorandum. Date: 25 June 1956

Author: James J. Nickson, M.D. Title: A Proposal for the Continuation of the Study of the Post-Irradiation Syndrome in Humans. Document Type: Proposal. Date: June 1956

From: Col. Irving L. Branch. To: The Surgeon General, Department of the Army. Subject: Funding of the Studies on Post-Irradiation Syndrome in Humans at the Sloan-Kettering Institute for Cancer Research. Document Type: Memorandum. Date: 26 July 1956

From: Maj. John A. Hilcken, MSC. To: Mrs. Lamasure. Subject: New Research Contract for Sloan-Kettering Institute for Cancer Research. Document Type: Memorandum. Date: 30 July 1956

From: Col. R. L. Hullinghorst, Medical Corps. Subject: Records Relating to Contract No. DA-49-007-M.D.-755. Document Type: Memorandum. Date: 14 August 1956

From: Maj. John A. Hilcken, MSC. To: Contracting Officer, OTSG. Subject: Initiation of New Research Contract No. DA-49-007-M.D.-755—The Sloan-Kettering Institute for Cancer Research. Document Type: Memorandum. Date: 14 August 1956

Author: Lt. Col. W. F. Lawrence, MSC. Title: Department of the Army Determinations and Findings Approval of Award for Attached Proposal to Study Post-Irradiation Syndrome in Humans. Report Period: 1 September 1956–31 August 1957. Document Type: Proposal. Date: 14 August 1956

From: Lt. Col. Max H. Brown, MSC. To: Contracting Officer, OTSG. Subject: Initiation of a Fixed Price Contract with Sloan-Kettering Institute for Cancer Research. Document Type: Memorandum. Date: 17 August 1956

From: Col. R. L. Hullinghorst, MC; Maj. John A. Hilcken, MSC. To: The Surgeon General, Department of the Army. Subject: AFSWP Funding Studies of Post-Irradiation Syndrome in Humans in the Sloan-Kettering Institute for Cancer Research. Document Type: Memorandum. Date: 20 August 1956

From: Maj. John A. Hilcken, MSC. To: C. P. Rhoads, M.D. Subject: Contract Administration and Reporting Procedure for Medical Research Contracts. Document Type: Letter; Protocol. Date: 23 August 1956

From: Maj. John A. Hilcken, MSC. To: Dr. Stella Leche Deignan. Subject: Initiation of Contract No. DA-49-007-M.D.-755. Document Type: Letter. Date: 27 August 1956

DEFENSE SPECIAL WEAPONS AGENCY/ARMED FORCES RADIOBIOLOGY INSTITUTE 1944-1974 (CONTINUED)

Sloan-Kettering Institute for Cancer Research, New York, NY (continued)

Author: Lt. Col. Max H. Brown, MSC. Title: Department of the Army Medical Research Contract with the Sloan-Kettering Institute for Cancer Research for Period 1 September 1956–31 August 1957. Document Type: Contract. Date: 1 September 1956

From: Maj. John A. Hilcken, MSC. To: James J. Nickson, M.D. Subject: Information Related to Contract No. DA-49-007-M.D.-755. Document Type: Letter. Date: 19 September 1956

Author: James J. Nickson, M.D. Title: Study of Post-Irradiation Syndrome in Humans. Quarterly Report for Period 1 September 1956–30 November 1956. Document Type: Report. Date: 1 December 1956

From: C. P. Rhoads, M.D. To: Maj. John A. Hilcken. Subject: Quarterly Report for the Period of 1 September 1956–30 November 1956. Document Type: Letter. Date: 12 December 1956

Authors: James J. Nickson, M.D.; Henry J. Koch, Jr., M.D.; Henry N. Bane, Ph.D. Title: Study of the Post-Irradiation Syndrome in Humans. Document Type: Abstract. Date: 1956 est.

Author: James J. Nickson, M.D. Title: Study of Post-Irradiation Syndrome in Humans. Quarterly Report for Period 1 December 1956–28 February 1957. Document Type: Report. Date: 10 March 1957

From: Mr. Bernard J. Palumbo. To: Lt. Col. W. F. Lawrence. Subject: Invoice for Supplies Furnished and Services Rendered Under Contract No. DA-49-007-M.D.-755. Document Type: Letter. Date: 7 May 1957

From: Bernard J. Palumbo. To: Office of the Surgeon General, Department of the Army. Subject: Invoice for Services Rendered and Supplies Furnished Under Contract No. DA-49-007-M.D.-755 for Period 1 September 1956–28 February 1957. Document Type: Bill. Date: 10 May 1957

From: Lt. Col. Max H. Brown, MSC. To: Mr. B. L. Mecke. Subject: Modification to Contract No. DA-49-007-M.D.-755. Document Type: Letter. Date: 15 May 1957

Author: Lt. Col. Max H. Brown, MSC. Title: Modification No.1 to Contract No. DA-49-007-M.D.-755 with the Sloan-Kettering Institute for Cancer Research. Document Type: Contract Modification. Date: May 1957

Subject: Correspondence regarding Contract No. DA-49-007-M.D.-755. Recommendation for Payment of Invoice for Period 1 September 1956–28 February 1957. Document Type: Memorandum. Date: May 1957

Author: James J. Nickson, M.D. Title: Study of the Post-Irradiation Syndrome in Humans. Progress Report for Period 1 March 1957–31 May 1957. Document Type: Report. Date: 1 June 1957

From: Lt. Col. Max H. Brown, MSC. To: Mr. B. L. Mecke. Subject: Outline of the Purpose of Modifications for Contracts (DA-49-007-M.D.-341, DA-49-007-M.D.-729, DA-19-007-M.D.-755). Document Type: Letter. Date: 19 August 1957

Authors: Lt. Col. Max H. Brown, MSC; C. P. Rhoads, M.D. Title: Modfication No. 2 for Fixed Price Contract with the Sloan-Kettering Institute for Cancer Research. Contract Period 1 September 1956– 31 October 1957. Document Type: Contract Modification. Date: 3 September 1957

From: C. P. Rhoads, M.D. To: Dr. John Barton, AFSWP. Subject: Request for Extension of the Ending Date and Reporting Period for Contract No. DA-49-007-M.D.-755. Document Type: Letter. Date: 27 September 1957

From: C. P. Rhoads, M.D. To: Dr. John Barton, AFSWP. Subject: Renewal Proposal for Contract No. DA-49-007-M.D.-755. Document Type: Letter. Date: 30 September 1957

Author: James J. Nickson, M.D. Title: A Proposal for the Continuation of the Study of the Post-Irradiation Syndrome in Humans. Document Type: Proposal. Date: September 1957

Author: James J. Nickson, M.D. Title: A Proposal for the Continuation of the Study of the Post-Irradiation Syndrome in Humans [includes organization chart of The Sloan-Kettering Institute for Cancer Research]. Document Type: Chart; Proposal. Date: September 1957

DEFENSE SPECIAL WEAPONS AGENCY/ARMED FORCES RADIOBIOLOGY INSTITUTE 1944-1974 (CONTINUED)

Sloan-Kettering Institute for Cancer Research, New York, NY (continued)

Subject: Contract Number DA49-007-M.D.-755: "Study of Post-Irradiation Syndrome in Humans" at the Sloan-Kettering Institute for Cancer Research. [includes related correspondence]. Document Type: Letter; Memorandum. Date: September–October 1957

Author: James J. Nickson, M.D. Title: Study of the Post-Irradiation Syndrome in Humans. Report for Period 1 September 1956–31 August 1957. Document Type: Report. Date: 1 October 1957

From: Col. Cordes F. Tiemann, USAF. To: The Surgeon General, Department of the Army. Subject: Re-Routing of a Letter from C. P. Rhoads, M.D., Requesting extension of Contract No. DA-49-007-M.D.-755 (Letter dated 27 September 1957 is attached). Document Type: Memorandum; Appendix/Attachment. Date: 4 October 1957

From: Lt. Col. Arthur D. Sullivan, MSC. To: Contracting Officer, OTSG. Subject: Request and Justification for Extension of Contract No. DA-49-007-M.D.-755 with The Sloan-Kettering Institute for Cancer Research. Document Type: Memorandum. Date: 8 October 1957

From: Mr. R. L. Mecke. To: Lt. Col. Max H. Brown. Subject: Request to Have Modification No. 2 Acted Upon by Appropriate Officers. Document Type: Letter. Date: 30 October 1957

From: Lt. Col. Arthur D. Sullivan. To: Contracting Officer, OTSG. Subject: New Research Contract No. DA-49-007-M.D.-910 (OI-139-58). Document Type: Memorandum. Date: 30 October 1957

Author: Lt. Col. Max H. Brown, MSC. Title: Department of the Army Fixed Price Medical Research Contract with the Sloan-Kettering Institute for Cancer Research. Document Type: Contract. Date: 1 November 1957

From: Col. W. F. Lawrence, MSC. Subject: Approval of Award for Contract No. DA-49-007-M.D.-910 to the Sloan-Kettering Institute for Cancer Research. Document Type: Letter. Date: 1 November 1957

From: Lt. Col. Arthur D. Sullivan, MSC. To: C. P. Rhoads, M.D. Subject: Administration of Contract for Continued Support of Research Entitled "The Study of the Post-Irradiation Syndrome in Humans." Document Type: Letter. Date: 5 November 1957

From: Col. W. F. Lawrence. To: Mr. B. L. Mecke. Subject: Receipt of Application for Proposed New Contract. Document Type: Letter. Date: 7 November 1957

From: Lt. Col. Max H. Brown, MSC. To: Mr. B. L. Mecke. Subject: Execution of Contract by Appropriate Officers. Document Type: Letter. Date: 15 November 1957

From: Lt. Col. Max H. Brown, MSC. To: Mr. R. L. Mecke. Subject: Modification No. 2 for Contract No. DA-49-007-M.D.-755. Document Type: Letter. Date: 19 November 1957

From: Mr. B. L. Mecke. To: Lt. Col. Max H. Brown, MSC. Subject: Modification No. 2 to Contract No. DA-49-007-M.D.-755. Document Type: Letter. Date: 19 November 1957

From: Mr. Bernard J. Palumbo. To: Col. W. F. Lawrence, MSC. Subject: Analysis for Overhead Computed for 1957. Document Type: Letter. Date: 21 November 1957

From: Bernhard Mecke. To: Lt. Col. Max H. Brown, MSC. Subject: Notarized Copies of Contract No. DA-49-007-M.D.-910. Document Type: Letter. Date: 29 November 1957

From: Lt. Col. Max H. Brown. To: Mr. R. L. Mecke. Subject: Copies of Contract No. DA-49-007-M.D.-910. Document Type: Letter. Date: 3 December 1957

Author: Marian J. Johnston. Title: Summary of Negotiation and Contract Award Data for Contract No. DA-49-007-910. Document Type: Contract; Appendix/Attachment. Date: 13 December 1957

From: Lt. Col. Max H. Brown, MSC. To: Mr. R. L. Mecke. Subject: Contract Expiration and Contract Finalization Procedure. Document Type: Letter. Date: 16 December 1957

DEFENSE SPECIAL WEAPONS AGENCY/ARMED FORCES RADIOBIOLOGY INSTITUTE 1944-1974 (CONTINUED)

Sloan-Kettering Institute for Cancer Research, New York, NY (continued)

From: Lt. Col. Max H. Brown, MSC. Subject: Extension of the Ending Date for Contract No. DA-49-007-M.D.-755. Document Type: Memorandum. Date: 1957 est.

Author: James J. Nickson, M.D. Title: Study of the Post-Irradiation Syndrome in Humans [Final Report]. Document Type: Report. Date: 1 February 1958

From: Bernhard L. Mecke. To: Lt. Col. Max. H. Brown. Subject: Final Scientific Report for Contract No. DA-49-007-M.D.-755 with Accompanying Forms. Document Type: Letter; Appendix/Attachment. Date: 25 March 1958

From: Lt. Col. Arthur D. Sullivan, MSC. To: Mr. R. L. Mecke. Subject: Provision of Funds for Research Project Entitled "Study of the Post-Irradiation Syndrome on Humans" and a Request for Vouchers. Document Type: Letter. Date: 28 March 1958

From: Charles A. O'Connor. To: Lt. Col. W. F. Lawrence. Subject: The Submission of Quarterly Progress Reports and Invoice for the Period 1 March 1957–31 August 1957. Document Type: Letter. Date: 2 April 1958

From: Charles A. O'Connor. To: Lt. Col. W. F. Lawrence. Subject: The Submission of Quarterly Progress Report and Invoice for Period 1 November 1957–31 January 1958. Document Type: Letter. Date: 10 April 1958

From: Bernhard L. Mecke. To: Lt. Col. Arthur D. Sullivan, MSC. Subject: Financial and Technical Reports for Contract No. DA-49-007-M.D.-755. Document Type: Letter. Date: 11 April 1958

From: Lt. Col. Max H. Brown, MSC (Letter #1); Lt. Col. Arthur D. Sullivan, MSC (Letter #2). To: Chief, Research and Develoment Division (Letter #1); Contracting Officer, OTSG (Letter #2). Subject: Correspondence on Contract DA-49-007-M.D.-910: "Study of Post-Irradiation Syndrome in Humans" at the Sloan-Kettering Institute for Cancer Research. Document Type: Letter. Date: April 1958

From: Lt. Col. Max H. Brown. To: Chief, Voucher Branch. Subject: Recommendation for Payment of Invoice for Contract No. DA-49-007-M.D.-910. Document Type: Memorandum. Date: 1 May 1958

From: Col. W. F. Lawrence, MSC. To: Mr. B. L. Mecke. Subject: Acknowlegement of Invoice Receipt and Request for Breakdown of Costs Incurred Under Contract No. DA-49-007-M.D.-755. Document Type: Letter. Date: 13 May 1958

Author: James J. Nickson, M.D. Title: Study of the Post-Irradiation Syndrome on Humans. Progress Report for Period 1 February 1958–30 April 1958. Document Type: Report. Date: 1 June 1958

From: Charles A. O'Connor. To: Lt. Col. W. F. Lawrence. Subject: Final Report of Expenditures Under Contract No. DA-49-007-M.D.-755 for Period 1 September 1956–31 October 1957. Document Type: Letter. Date: 3 June 1958

Title: Vouchers for Services Rendered and Supplies Furnished Under Contract No. DA-49-007-M.D.-755. Document Type: Form. Date: 3 June 1958

From: Chief, Biophysics Research Branch. To: Contracting Officer, OTSG. Subject: Correspondence Regarding Payment of Final Voucher for Contract No. DA-49-007-M.D.-755. Document Type: Memorandum; Form. Date: 10 June 1958

From: Lt. Col. Max H. Brown, MSC. To: Chief, Voucher Section. Subject: Recommendation for Payment of Final Billing for Contract No. DA-49-007-M.D.-755. Document Type: Memorandum. Date: 12 June 1958

Subject: Correspondence on Contract DA-49-007-M.D.-755 and DA-49-007-M.D.-910: "Study of Post-Irradiation Syndrome in Humans" at the Sloan-Kettering Institute for Cancer Research. Document Type: Letter. Date: June 1958

Author: James J. Nickson, M.D. Title: Study of the Post-Irradiation Syndrome in Humans. Progress Report for Period 1 May 1958–31 July 1958. Document Type: Report. Date: 1 August 1958

From: Bernard Palumbo. To: Lt. Col. W. F. Lawrence. Subject: Submission of Quarterly Progress Report and Invoice for Contract No. DA-49-007-M.D.-910 Covering the Period 1 February 1958–31 July 1958. Document Type: Letter. Date: 11 August 1958

DEFENSE SPECIAL WEAPONS AGENCY/ARMED FORCES RADIOBIOLOGY INSTITUTE 1944-1974 (CONTINUED)

Sloan-Kettering Institute for Cancer Research, New York, NY (continued)

Subject: Correspondence on DA-49-007-M.D.-910: "Study of Post-Irradiation Syndrome in Humans" at the Sloan-Kettering Institute for Cancer Research. Document Type: Letter. Date: August-September 1958

From: Lt. Col. Arthur D. Sullivan, MSC. To: File. Subject: Result of Discussion Regarding Renewal of Contract No. DA-49-007-M.D.-910. Document Type: Memorandum. Date: 21 October 1958

From: Col. R. L. Hullinghorst, Deputy Special Assistant for Research and Development Affairs. To: Chief, Armed Forces Special Weapons Project. Subject: Proposal for the Continuation of the Study of the Post-Irradiation Syndrome in Humans. Document Type: Memorandum. Date: 22 October 1958

Authors: James J. Nickson, M.D.; Arvin S. Glickman, M.D. Title: A Proposal for the Continuation of the Study of the Post-Irradiation Syndrome in Humans. Document Type: Proposal. Date: 24 October 1958

From: Maj. Irwin Lee, MSC. Subject: Correspondence Regarding Review of Contract File for Contract No. DA-49-007-M.D.-910. Document Type: Memorandum. Date: October 1958 est.

To: The Surgeon General. Subject: Funding of Studies on Post-Irradiation Syndrome in Humans at the Sloan-Kettering Institute for Cancer Research. Document Type: Memorandum. Date: 17 November 1958

From: Maj. Robert D. Evans, MSC. To: Mr. Bernhard L. Mecke. Subject: Request for Documents Necessary to Complete Finalization Procedure for Contract No. DA-49-007-M.D.-910. Document Type: Letter. Date: 9 December 1958

Title: Report of Inventions and Subcontracts Form for Contract No. DA-49-007-M.D.-910. Document Type: Form. Date: 24 December 1958

Title: Partial Payment Record for Contract No. DA-49-007-M.D.-755 with the Sloan-Kettering Institute for Cancer Research. Document Type: Form. Date: 1958 est.

From: Lt. Col. A. D. Sullivan, MSC. To: Commanding General. Subject: Receipt of Final Scientific Report for Contract No. DA-49-007-M.D.-910. Document Type: Routing Slip. Date: 3 February 1959

From: C. P. Rhaods, M.D. To: Col. R. W. Hullinghorst. Subject: Final Report for Contract No. DA-49-007-M.D.-910: "Study of the Post-Irradiation Syndrome in Humans." Document Type: Letter. Date: 25 February 1959

From: Lt. Col. Arthur D. Sullivan, MSC. To: Contracting Officer, USAMRDC. Subject: Request for Payment of Final Voucher for Contract No. DA-49-007-M.D.-910. Document Type: Memorandum. Date: 27 February 1959

Authors: James J. Nickson, M.D.; Arvin S. Glicksman, M.D., Assistant, Experimental Radiation Section, Sloan-Kettering Institute. Title: Study of the Post-Irradiation Syndrome in Humans. Document Type: Report. Date: 1 April 1960

From: Maj. Irwin Lee, MSC. Subject: Review of the Sloan-Kettering Institute for Cancer Research Contract File. Document Type: Memorandum. Date: 1960 est.

Authors: James J. Nickson, M.D.; Arvin S. Glicksman, M.D. Title: The Study of the Post-Irradiation Syndrome in Man, Period of Report: 1 January 1960–31 January 1961. Document Type: Report. Date: 1 February 1961

Author: Lt. Col. Max H. Brown, MSC. Title: Modification of Contracts with Sloan-Kettering Institute for Cancer Research. Document Type: Contract. Date: Unknown

Author: James J. Nickson, M.D. Title: Annual Report, Contract No. DA-49-007-M.D.-669; Post-Irradiation Syndrome in Humans, Period of Report 01 April 1955–31 March 1956. Document Type: Report. Date: May 1956

Author: James J. Nickson, M.D., Head Experimental Radiation Section, Member Sloan-Kettering Institute, Chief Department of Radiation Therapy, Memorial Center. Title: Study of the Post-Irradiation Syndrome in Humans, Period of Report, 01 November 1957–31 October 1958. Document Type: Report. Date: 1958 est.

DEFENSE SPECIAL WEAPONS AGENCY/ARMED FORCES RADIOBIOLOGY INSTITUTE 1944-1974 (CONTINUED)

Sloan-Kettering Institute for Cancer Research, New York, NY (continued)

Authors: James J. Nickson, M.D.; Henry J. Koch, Jr., M.D. Title: Study of the Post-Irradiation Syndrome in Humans. Progress Report for Period 1 April 1954–31 March 1955 [includes handwritten draft of title page]. Document Type: Notes; Cover. Date: 1955 est.

Authors: James J. Nickson, M.D.; Henry J. Koch, Jr., M.D. Title: Study of the Post-Irradiation Syndrome in Humans. Progress Report for Period 1 July 1954–30 September 1954. Document Type: Report. Date: 1954 est.

Title: Contracts and Modifications Re: Contract DA-49-007-M.D.-755, "Study of Post-Irradiation Syndrome in Humans," at the Sloan-Kettering Institute for Cancer Research [includes contracts, reports, proposal, and related correspondence]. Document Type: Report; Memorandum; Contract. Date: Unknown

Texas Medical Center, Houston, TX

Start Date	Number	Title
1952	**DNA02**	**Influence of total body irradiation**

(For abstract and documentation, see Baylor University College of Medicine, Houston, TX.)

University of Cincinnati College of Medicine, Cincinnati, OH

Start Date	Number	Title
1961	**DNA03**	**Radiation effects in man**

(For abstract and documentation, see Cincinnati General Hospital, Cincinnati, OH.)

Veterans Administration Hospital, Long Beach, CA

Start Date	Number	Title
Unknown	**DNA04**	**Effects of incidental irradiation of "normal" humans**

Abstract: From a presently undetermined date until 1969, researchers from the University of California at Irvine investigated neurophysiological and behavioral effects of radiation. Twelve male cancer patients at the Veterans Administration Hospital in Long Beach, CA, participated. This study explored specific physiological sensitivities to radiation, including sensory detection and estimate of dose, visual perception, sensory discrimination and effects on performance. Radiation dose was determined by the patient's treatment routine. Visual perception of low-level radiation from a cobalt-60 machine was tested after a ten minute dark-adaptation period. Perception of radiation was thought to be affected by the phosphene effect, a visual sensation appearing with the eyes closed, and in the absence of visual light. Elimination of the period of dark adaptation reduced patients' ability to distinguish radiation from non-radiation exposures. Simple motor performance

DEFENSE SPECIAL WEAPONS AGENCY/ARMED FORCES RADIOBIOLOGY INSTITUTE 1944-1974 (CONTINUED)

Veterans Administration Hospital, Long Beach, CA (continued)

was impaired when central portions of the brain received approximately fifty rads. No reliable post-treatment effects of irradiation on complex motor performance were found.

Documents: Authors: B. H. Feder, M.D.; R. S. Boswell, Ph.D.; J. W. Schaeflein, M.Sc.; C. A. Sondhaus, Ph.D.; J. Stuhlbarg, M.D. Title: Further Observations on Reaction Time and Flicker Fusion in "Normal" Humans Under Daily Irradiation. Journal: *Radiology Journal*, vol. 90. Document Type: Journal Article. Date: February 1968

Authors: Reed S. Boswell, Ph.D.; B. H. Feder, M.D.; J. W. Schaeflein, M.Sc. Title: Neurophysiological and Behavioral Effects of Incidental Irradiation of "Normal" Humans. Document Type: Report. Date: August 1969

Walter Reed Army Institute of Research, Washington, DC

Start Date	Number	Title
1958	**DNA08**	**Calibration of whole-body counting facility**

Abstract: From 1958 to 1960, researchers from Walter Reed Army Institute of Research in Washington, DC, validated accurate calibration of two whole-body counters. Thirteen healthy individuals participated. Nine participants took part in the calibration of the liquid scintillation counter. Three of the nine and four other participants participated in the calibration of the crystal spectrometer. Each participant ingested approximately 2.1 microcuries of potassium-42. Maximum gamma ray activity and total body potassium were measured in each participant by one or both of the instruments. Two subjects participated twice in the crystal spectrometer calibration. The efficiency of the liquid scintillation counter as a function of participant weight was determined. Body potassium values were obtained with both the liquid scintillation and crystal spectrometer counters.

Documents: Authors: Maj. Kent T. Woodward; Maj. Charles L. Randolph, Jr.; Capt. Robert van Hoek; Lt. Col. James B. Hartgering; Capt. Harry A. Claypool; M. Sgt. Arnold A. Manskey, Jr.; Mr. Jay J. Noble. Title: The Walter Reed Whole-Body Counting Facility. Document Type: Report. Date: July 1960

Title: The Walter Reed Whole-Body Counting Facility: Details of Contraction Gamma Radioactivity in People and Foodstuffs. Document Type: Report. Date: July 1958–July 1960

Walter Reed General Hospital, Washington, DC

Start Date	Number	Title
1972	**DNA10**	**Technetium-99m minicolloid for radionuclide lymphography**

Abstract: From 1972 to 1973, researchers from Walter Reed General Hospital in Washington, DC, improved diagnostic imaging capabilities in the treatment of lymphatic disease. The effectiveness of an innovative scanning agent, technetium-99m "minicolloid" (Tc-99m), was compared to a commercially available Tc-99m preparation. Eight patients participated. Tc-99m

DEFENSE SPECIAL WEAPONS AGENCY/ARMED FORCES RADIOBIOLOGY INSTITUTE 1944-1974 (CONTINUED)

Walter Reed General Hospital, Washington, DC (continued)

minicolloid was injected into their feet. Researchers observed the movement of the scanning agent, as well as the effect of exercise on agent movement. Tc-99m minicolloid demonstrated greater ability to migrate through successive lymph node levels as a result of its smaller particle size. Dose to scan time for Tc-99m minicolloid was short and flexible. This radionuclide technique was preferable due to its effectiveness and simplicity and the facilitation of long-term follow-up care of patients.

Documents: Authors: G. L. Dunson et al. Title: Technetium-99m Minicollloid for Radionuclide Lymphography. Document Type: Report. Date: July 1973

Start Date	Number	Title
Unknown	**DNA05**	**Effect of central nervous system irradiation**

Abstract: From a presently undetermined date until 1971, researchers from the Walter Reed General Hospital in Washington, DC, analyzed the effect of radiation on performance. Sixteen cancer patients participated. Patients were under age fifty, educated at least through ninth grade, did not have brain damage or psychosis, and had tumors that could be treated with radiation. Eight control participants were employees at the Walter Reed Hospital and received no radiation. Participants were divided into three groups: brain irradiation, spinal irradiation, and non-irradiated. Radiation doses are reported as tumor dose to the brain or spinal column expressed in roentgen equivalent tumor (ret) and ranged from 600 to 1,900 rets. Each group took eleven behavioral tests, including decision-making, intelligence, memory, motor coordination, muscle strength, blood pressure, motivation, emotional state, health questionnaire, time horizon, and social distance. Behavioral functions were highly resistant to impairment from therapeutic central nervous system irradiation. There were no significant differences between irradiated and non-irradiated patients in a broad spectrum of behavioral measures.

Documents: Authors: Aaron Wolfgang, Ph.D.; John G. Maier, M.D. Title: Effects of Central Nervous System Irradiation on Human Performance, Blood Pressure and Emotional State. Document Type: Report. Date: December 1972

NAVY 1944–1974

Abbassia Fever Hospital, Cairo, Egypt

Start Date	Number	Title
Unknown	**NMRU3-13**	**Treatment of chronic urinary Salmonella carriers**

Abstract: From a presently undetermined date until 1969, researchers from the Naval Medical Research Unit 3 stationed in Cairo, Egypt, investigated methods of clinically managing urinary Salmonella carriers. Twenty-six male Egyptians participated. For five patients, imaging studies of the urinary bladder were done during urination. Results of this study are not available at this time.

Documents: Title: Treatment of Chronic Urinary Salmonella Carriers. Document Type: Event Profile. Date: 1994

Start Date	Number	Title
Unknown	**NMRU3-15**	**Chronic urinary Salmonella carriers with intermittent bacteraemia**

Abstract: From a presently undetermined date until 1970, researchers from the Naval Medical Research Unit 3 stationed in Cairo, Egypt, along with investigators at Kasr-el-Aini Hospital and Abbassia Fever Hospital, both located in Cairo, examined bacterial contamination of circulating blood in urinary Salmonella carriers. Urinary Salmonella excretion is often a complication of Schistosoma haematobium infection because of urinary tract damage. From a population of forty urinary Salmonella carriers, fifteen male Egyptian patients with urinary tract damage, verified by x-ray, participated in this follow-up study. Results of this study are not available at this time.

Documents: Title: Chronic Urinary Salmonella Carriers with Intermittent Bacteraemia. Document Type: Event Profile. Date: 1994

Start Date	Number	Title
Unknown	**NMRU3-16**	**Urinary schistosomiasis treated with niridazole (Ambilhar): quantitative evaluation**

Abstract: From a presently undetermined date until 1970, researchers from the Naval Medical Research Unit 3 stationed in Cairo, Egypt, along with investigators at Kasr-el-Aini Hospital and Abbassia Fever Hospital, both located in Cairo, Egypt, evaluated the use of niridazole (Ambihar) in the treatment of Schistosoma haematobium. Seventeen male Egyptian patients with schistosomal infections participated. Kidney function tests, including plain x-rays, were part of this study. Results of this study are not available at this time.

Documents: Title: Urinary Schistosomiasis Treated with Niridazole (Ambilhar): Quantitative Evaluation. Document Type: Event Profile. Date: 1994

Ahmadu Bello University, Zaria, Nigeria

Start Date	Number	Title
1969	**NMRU3-10**	**Some effects of louse-borne relapsing fever on the function of the heart**

Abstract: In 1969, researchers from the Naval Medical Research Unit 3 stationed in Cairo, Egypt, along with investigators at the Haile Selassie University in Addis Ababa, Ethiopia; Ahmadu Bello

NAVY 1944–1974 (CONTINUED)

Ahmadu Bello University, Zaria, Nigeria (continued)

University in Zaria, Nigeria; and St. Paul's Hospital in Addis Ababa, Ethiopia; and researchers at the Hammersmith Hospital and St. John's Hospital for Diseases of the Skin, both in London, England, studied the effects of louse-borne relapsing fever on heart function. Clinical, EKG, and hemodynamic studies were made on thirty-one patients in Ethiopia, and more detailed studies were made on nineteen additional patients. Posteroanterior chest x-rays were taken periodically to survey cardiac and pulmonary changes. Evidence of an abnormal myocardium was obtained and transient acute cor pulmonale was found to occur after the reaction to treatment. No simple correlation could be established between clinical signs and electrocardiographic and hemodynamic evidence of myocardial damage. A statistically significant correlation was found between prolonged QTc and relative acidemia before treatment and between T wave abnormalities and hypocapnia during the chill phase of the febrile reaction following treatment.

Documents: Authors: E. H. O. Parry et al. Title: Some Effects of Louse-Borne Relapsing Fever on the Function of the Heart. Journal: *The American Journal of Medicine.* Document Type: Journal Article. Date: October 1970

Ain Shams University, Cairo, Egypt

Start Date	Number	Title
1972	**NMRU3-08**	**Changes in hepatic blood flow and blood volume after splenectomy for bilharzial hepatosplenic fibrosis dehydrogenase deficiency**

Abstract: In 1972, researchers from the Naval Medical Research Unit 3 stationed in Cairo, Egypt, and Ain Shams University in Cairo, Egypt, evaluated the effects of spleen removal in patients suffering from liver or spleen enlargement due to schistosomal infections. Liver function and peripheral blood flow patterns were examined. Fifteen Egyptian patients with schistosomiasis participated. Hepatic blood flow was calculated using gold-198, plasma volume was determined using iodine-131 labeled human serum albumin, and red blood cell volume was calculated using chromium-51 sodium citrate. Radiation exposures and results of this study are not available at this time.

Documents: Title: Changes in Hepatic Blood Flow and Blood Volume After Splenectomy for Bilharzial Hepatosplenic Fibrosis Dehydrogenase Deficiency. Document Type: Event Profile. Date: 1994

Start Date	Number	Title
1967	**NMRU3-22**	**Symptomatic, radiological, and functional improvement following treatment of urinary schistosomiasis in Egypt**

Abstract: In 1967, researchers from the Naval Medical Research Unit 3 stationed in Cairo, Egypt, along with investigators at Kasr-el-Aini Hospital and Ain-Shams Hospital, both in Cairo, Egypt, investigated complications associated with urinary schistosomial infections. Ten male Egyptian patients infected with Schistosoma haematobium participated. Tartar emetic or sodium dimercaptosuccinate was used to induce vomiting. Results were assessed clinically, radiologically (plain x-ray of the bladder), and functionally. Radiation exposures and results of this study are unavailable at this time.

Documents: Title: Symptomatic, Radiological, and Functional Improvement Following Treatment of Urinary Schistosomiasis in Egypt. Document Type: Event Profile. Date:1994

NAVY 1944–1974 (CONTINUED)

Armed Forces Radiobiology Research Institute, Bethesda, MD

Start Date	Number	Title
1971	**NNMC-097**	**Enhanced blood coagulation and fibrolysis in a patient with amyloidosis**

Abstract: In 1971, researchers from the Armed Forces Radiobiology Research Institute and the National Naval Medical Center in Bethesda, MD, reported a single case of enhanced coagulation and fibrinolysis in primary amyloidosis with episodes of severe hemorrhage. The patient, a thirty-one year-old male, was admitted with cramping epigastric pain and massive hematochezia. A barium enema disclosed a constriction of the transverse colon, and exploratory laporatomy revealed a subserosal hemorrhage of the colon. Several laboratory tests and a cardiac angiography were performed.

Documents: Title: Enhanced Blood Coagulation and Fibrolysis in a Patient with Amyloidosis. Document Type: Event Profile. Date: 1994

Beth Israel Hospital, Boston, MA

Start Date	Number	Title
1947	**ONR-39**	**The use of I-131 in treatment of heart diseases and long term radiation effects of I-131 in man**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Boston Lying-In Hospital, Boston, MA

Start Date	Number	Title
1949	**ONR-02**	**Circulating red cell volume and body hematocrit in normal pregnancy and puerperium by direct measurement, using radioactive red cells**

Abstract: From a presently undetermined date until 1951, researchers at Harvard Medical School, the Boston Lying-In Hospital, and the Massachusetts Institute of Technology studied circulating red cell volume during pregnancy and the Puerperium (the forty two days following childbirth). Twelve pregnant women from the Boston Lying-In Hospital participated. Investigators tagged red cells using radioactive iron (Fe-55) to determine, by direct measurement, the volume of circulating red cell mass during normal pregnancy and the period during and just after childbirth. Results from the study indicated that an increase in red cells of approximately forty percent occurs during normal pregnancy. The increase in the circulating red cell mass was significant and exceeded two standard deviations 160 days before delivery. At the end of the first week in the puerperium, the red cell volume increase still exceeded two standard deviations. The volume of the red cell mass returned to normal nonpregnant limits approximately sixty days following

NAVY 1944–1974 (CONTINUED)

Boston Lying-In Hospital, Boston, MA (continued)

delivery. Whole blood volume increased by approximately forty-five percent during normal pregnancy. Body hematocrit and large vessel hematocrit each decreased during pregnancy. The average decrease in venous or large vessel hematocrit was fifteen percent, while body hematocrit decreased only 8.4 percent. The ratio between body hematocrit and venous hematocrit increased during normal pregnancy, and the high ratio suggested that a relatively greater part of the blood volume was accommodated by the large vessels rather than the capillary bed.

Documents: Authors: William L. Caton et al. Title: The Circulating Red Cell Volume and Body Hematocrit in Normal Pregnancy and the Puerperium: By Direct Measurement, Using Radioactive Red Cells. Journal: *American Journal of Obstetrics and Gynecology,* vol. 61, no. 6. Document Type: Journal Article. Date: June 1951

Start Date	Number	Title
Unknown	**ONR-03**	**Persistence and utilization of maternal iron for blood formation during infancy**

Abstract: In the 1950s researchers from the Department of Pediatrics, Medicine, and Obstetrics, Harvard Medical School, the Radioactivity Center, Massachusetts Institute of Technology, Boston Lying-In Hospital, Children's Hospital, and Peter Bent Brigham Hospital in Boston, MA, assessed the persistence and utilization of transplacental iron during infancy. This study was an adjunct to other studies that investigated maternal red cell volume and hematocrit via radioactive iron (Fe-55). Donor red cells labeled with Fe-55 were administered to eleven pregnant women on four to seven occasions during pregnancy. From the eleven pregnancies, and five subsequent ones of four of the women, sixteen infants were available for participation in the study. The total activity of Fe-55 administered ranged from two to twelve microcuries, equivalent to an initial dose rate of 0.1 to 1.0 millirads per day in the mother's blood stream. The cumulative radiation dose to the blood of the infants for periods averaging 397 days (range 115 to 580) on average, was 131 millirads (range 30 to 354). According to the researchers, the total radiation resulting from the Fe-55 was, on average, less than that due to natural sources (cosmic rays, terrestrial gamma rays, and naturally occurring potassium-40). The sixteen infants were studied up to thirty-two months of age. Measurements of red blood cells, hemoglobin, hematocrit, total iron, and Fe-55 of erythrocytes were made from the umbilical cord blood and from venous blood at intervals during the period. Results indicated very little or no utilization of dietary iron from hemoglobin until three to four moths after birth. A 20 percent rise in transplacental iron, at 200 to 400 days, over hemoglobin at birth suggested utilization of iron stored elsewhere during fetal life. Researchers observed that prematurity increases the proportionate contribution of dietary iron.

Documents: Authors: C. A. Smith et al. Title: Persistence and Utilization of Maternal Iron for Blood Formation During Infancy. Journal: *Journal of Clinical Investigation*, vol. XXXIV, no. 9. Document Type: Journal Article. Date: September 1955

Start Date	Number	Title
Unknown	**ONR-17**	**Lifespan of preserved red cells**

Abstract: From a presently undetermined date until 1971, researchers from the Boston University Medical Center, Boston, MA, and the Naval Blood Research Laboratory, Chelsea, MA, studied the

NAVY 1944–1974 (CONTINUED)

Boston Lying-In Hospital, Boston, MA (continued)

lifespan and the rate of random destruction of preserved red blood cells. Forty-four red cell survival studies were performed in thirty-nine patients who required therapeutic transfusions according to orders from clinical staff. Twenty-three of the patients had incurred traumatic injuries in a war zone two to four weeks before admission to the Naval Hospital, Chelsea. Eight of the patients had carcinoma, and eight had other diagnoses. Two different red cell populations were transfused into each of four patients, and the survivals were measured simultaneously. In another patient, the survivals of two transfused red cell populations were studied in succession. The red cell volume of each recipient was measured immediately before the transfusion with the use of five or ten microcuries of radioactive chromium (Cr-51). Survival of the recipient's own cells was determined by the radioactive chromium technique; the recipient's red cells were labeled with twenty microcuries of Cr-51 at the time the red cell volume was measured. Researchers found that the mean red cell lifespan of ninety-seven days was not affected by either the method of preservation or the length of storage. Accelerated linear removal of red cells was seen in severely injured patients, and improved red cell survival was associated with improvement in the recipient's health. The correlation between the lifespan of transfused cells and the recipient's general health suggested that the decreased long-term survival noted in the recipients was produced by some extracorpuscular toxic factor.

Documents: Authors: I. O. Szymanski; C. R. Valeri. Title: Lifespan of Preserved Red Cells. Journal: *Vox Sanguinis,* vol. 21. Document Type: Journal Article. Date: 1971

Boston University School of Medicine, Boston, MA

Start Date	Number	Title
1964	**NHCHEL-001**	**Blood volume studies (Cr-51 and I-125)**

Abstract: From 1964 until present, researchers from the Boston University School of Medicine and the Naval Blood Research Laboratory, both in Boston, MA, studied the preservation of blood and blood products. One hundred-fifty active duty military personnel and civilians participated in blood volume studies using chromium-51 and iodine-125. Radiation exposures and results of this study are unavailable at this time.

Documents: Title: Blood Volume Studies (Cr-51 and I-125). Document Type: Event Profile. Date: 1994

Start Date	Number	Title
1964	**NHCHEL-002**	**Red blood cell survival studies (Cr-51 and I-125)**

Abstract: From 1964 until present, researchers from the Naval Blood Research Laboratory and the Boston University School of Medicine, both in Boston, MA, studied the preservation of blood and blood products. Seven hundred active duty military personnel and civilians participated in studies of red blood cell survival using chromium-51 and iodine-125. Results of this study are unavailable at this time.

Documents: Title: Red Blood Cell Survival Studies (Cr-51 and I-125). Document Type: Event Profile. Date: 1994

NAVY 1944–1974 (CONTINUED)

Boston University School of Medicine, Boston, MA (continued)

Start Date	Number	Title
1964	**NHCHEL-003**	**Platelet survival studies (Cr-51 and I-125)**

Abstract: From 1964 until present, researchers from the Boston University School of Medicine and the Naval Blood Research Laboratory, both in Boston, MA, studied the preservation of blood and blood products. One hundred-fifty active duty military personnel and civilians participated in studies of platelet survival using chromium-51 and iodine-125. Results of this study are unavailable at this time.

Documents: Title: Platelet Survival Studies (Cr-51 and I-125). Document Type: Event Profile. Date: 1994

Start Date	Number	Title
1964	**NHCHEL-004**	**Blood volume studies (Cr-51 and I-125)**

Abstract: From 1964 until present, researchers from the Naval Blood Research Laboratory and the Boston University School of Medicine, both in Boston, MA, have studied the preservation of blood and blood products. One thousand active duty military and civilian patients participated in blood volume studies involving chromium-51 and iodine-125 labelling. Results of this study are unavailable at this time.

Documents: Title: Blood Volume Studies (Cr-51 and I-125). Document Type: Event Profile. Date: 1994

Start Date	Number	Title
Unknown	**ONR-16**	**Analysis of erythrocyte survival curves obtained simultaneously by Cr-51 and automated differential agglutination technic (sic)**

Abstract: From a presently undetermined date until 1969, researchers from the Naval Blood Research Laboratory in Chelsea, MA and Boston University School of Medicine, Boston, MA compared red blood cell survival curves obtained by two different clinical techniques. This study determined age-dependent and random destruction factors in red blood cell survival using a radioisotopic chromium technique compared to an automated differential agglutination (ADA) technique. Nineteen individuals at the Boston University Medical Center in Boston, MA participated. In all cases it was possible to estimate the erythrocyte lifespan with the ADA technique. Significant random destruction of red blood cells was observed in nine patients. With the chromium-51 technique it was possible to estimate the erythrocyte lifespan in only ten cases; these values were similar to those obtained with the ADA technique. It was not possible to determine the erythrocyte lifespan in the remaining nine cases; the best estimates were too large. The inability to measure erythrocyte lifespan satisfactorily with the chromium-51 technique may have been related to the preferential labeling of young red blood cells in vitro.

Documents: Authors: I. O. Szymanski; C. R. Valeri. Title: Analysis of erythrocyte survival curves obtained simultaneously by Cr-51 and an automated differential agglutination technique: Journal: *Transfusion*, vol. 10, issue 6. Document Type: Journal Article. Document Date: December 1970

NAVY 1944–1974 (CONTINUED)

Cairo University Hospital, Cairo, Egypt

Start Date	Number	Title
Unknown	**NMRU3-06**	**Schistosomiasis of the liver: Clinical, pathological, and laboratory studies in Egyptian cases**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Cairo University, Cairo, Egypt

Start Date	Number	Title
1966	**NMRU3-03**	**Bilharzial splenomegaly and refractory anemia**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Camp Stoneman, Pittsburg, CA

Start Date	Number	Title
1956	**NRDL-03**	**Protecting and cleaning hands contaminated by synthetic fallout under field conditions**

Abstract: From 1956 to 1958, researchers at the Naval Radiological Defense Laboratory in San Francisco, CA, explored methods of removing skin contaminants from the hands. Researchers sought to identify methods for protection and cleansing of skin under field conditions. To date, no information is available on the number of study participants. The contaminants used in the study were dry and slurry synthetic fallout made with lanthanum-140 (La-140) tracer and La-140 in an acid solution. Results of the study showed that three experimental cleaning solutions (ethylenediaminetetraacetic acid, saline, and citric acid) were found to remove contaminants more readily than soap and water. A waterless hand cleaner was as effective as soap and water. Two protective creams used to reduce adherence of contaminants were not as effective as soap and water. There was no observable difference in decontamination effectiveness traceable to contaminant type. No decontamination method was found reliable enough to be used without the need for a radiation check after washing.

Documents: Author: R. H. Black. Title: Protecting and Cleaning Hands Contaminated by Synthetic Fallout Under Field Conditions. Document Type: Report. Date: 27 August 1958

NAVY 1944–1974 (CONTINUED)

Caylor-Nickel Clinic, Bluffton, IN

Start Date	Number	Title
1947	**ONR-41**	**A study of the effects of radiation on the microscopic vascular supply of various organs of the body by means of microradiography**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

George William Hooper Foundation, College of Dentistry, University of California, San Francisco, CA

Start Date	Number	Title
1950	**ONR-44**	**Oral and alimentary effects of ingestion of radioactive elements**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1950	**ONR-45**	**Oral and alimentary effects of ingestion of radioactive elements**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Haile Selassie I University, Addis Ababa, Ethiopia

Start Date	Number	Title
1969	**NMRU3-10**	**Some effects of louse-borne relapsing fever on the function of the heart**

(For abstract and documentation, see Ahmadu Bello University, Zaria, Nigeria.)

Hammersmith Hospital, London, England

Start Date	Number	Title
1969	**NMRU3-10**	**Some effects of louse-borne relapsing fever on the function of the heart**

(For abstract and documentation, see Ahmadu Bello University, Zaria, Nigeria.)

NAVY 1944–1974 (CONTINUED)

Harlem City Hospital, New York, NY

Start Date	Number	Title
Unknown	**ONR-23**	**Radiation injury to the capillary wall**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Harvard Medical School, Cambridge, MA

Start Date	Number	Title
1949	**ONR-02**	**Circulating red cell volume and body hematocrit in normal pregnancy and puerperium by direct measurement, using radioactive red cells**

(For abstract and documentation, see Boston Lying-In Hospital, Boston, MA.)

Start Date	Number	Title
1949	**ONR-03**	**Persistence and utilization of maternal iron for blood formation during infancy**

(For abstract and documentation, see Boston Lying-in Hospital, Boston, MA.)

Start Date	Number	Title
1948	**ONR-26**	**Intracellular changes in trauma, depletion and repair with special reference to burns**

Abstract: From 1948 until a presently undetermined date, researchers from Harvard Medical School and Massachusetts General Hospital, Boston, MA, studied intracellular changes as a result of trauma with a special focus on burns. The objective of the study was to improve therapy of trauma through study of its cellular and metabolic effects. Radioactive chromium-tagged red cells were used to measure red cell destruction. As of June 1953, 116 burn patients participated in the study. To date, no information on additional patients' radiation exposures, or research results is available.

Documents: Author: Oliver Cope. Title: Intracellular Changes in Trauma, Depletion and Repair with Special Reference to Burns, Covering Period from 01 January 1953 to 30 June 1953. Document Type: Report. Date: 29 July 1953

Author: Oliver Cope, M.D. Title: Annual Progress Report. Title of Project: Intracellular Changes in Trauma, Depletion and Repair—with Special Reference to Burns. Document Type: Report. Date: 26 January 1954

NAVY 1944–1974 (CONTINUED)

Harvard Medical School, Cambridge, MA (continued)

Start Date	Number	Title
Unknown	**ONR-25**	**A study of cellular biochemistry in surgical patients**

Abstract: The inclusive dates for this study at Massachusetts General Hospital and Harvard Medical School, Boston, MA, are presently undetermined. Researchers studied the urinary excretion of potassium-42 (K-42) and measured the state of potassium metabolism at the time of injection and the ratios of potassium in tissues and body fluids. A status report indicated that eighty-two surgical patients had participated in this project by January 1948. Seven of these patients also participated in measurements of total body water, whereby investigators measured the dilution of a measured infusion of heavy water. The average total body water measurement was found to be 70.9 percent. Initial findings indicated that patients, both well and ill, exhibited a constancy in their metabolism of a single tracer dose of K-42. The total body exchangeable potassium measured by dilution of K-42 varied over a wide range and was difficult to interpret relative to body weight. Researchers did not find a striking increase in the urinary excretion of potassium after trauma. With rare exceptions, the researchers also did not observe mass shifts of potassium independent of nitrogen, which may have been interpreted as alteration of intracellular chemistry without loss of protoplasm. Studies on cell equilibrium with K-42 indicated that there was a nonexchangeable fraction of potassium in red cells; therefore, this cell could not be used for the calculation of total body potassium. After forty hours the potassium in urine, muscle and plasma had reached equilibrium. A simple bedside method of estimating urinary potassium by precipitation as the perchlorate had also been developed.

Documents: Authors: Oliver Cope; Francis D. Moore. Title: A Study of Cellular Biochemistry in Surgical Patients. Document Type: Report. Date: 30 April 1947

Authors: Oliver Cope; Francis D. Moore. Title: A Study of Cellular Biochemistry in Surgical Patients. Document Type: Report. Date: 15 January 1948

Start Date	Number	Title
Unknown	**ONR-33**	**The investigation of the biological effects of radioactive sulfur**

Abstract: The dates for this study are presently undetermined. Researchers from Harvard Medical School proposed to study the irradiational effects of sulfur-35, its usefulness in the treatment of hyperadrenocorticism and hypertension, and its utility in studying fundamental aspects of sulfur metabolism. To date, no information is available on the number of participants or research results.

Documents: Title: Application for Aid in the Investigation of the Biological Effects of Radioactive Sulfur. Document Type: Proposal. Date: 1948 est.

NAVY 1944–1974 (CONTINUED)

Indiana University Medical Center, Indianapolis, IN

Start Date	Number	Title
Unknown	**ONR-13**	**Functional venography of the lower extremities**

At the time of publication there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Institute for Cancer Research, New York, NY

Start Date	Number	Title
1948	**ONR-04**	**Effect of total thyroidectomy on function of metastatic thyroid cancer**

(For abstract and documentation, see Massachusetts Institute of Technology, Cambridge, MA.)

Start Date	Number	Title
1955	**ONR-24**	**Determination of the effect of high dosage betatron irradiation to the pituitary and hypothalamus in man**

(For abstract and documentation, see James Ewing Hospital, New York, NY.)

Institute of Dermatology, London, England

Start Date	Number	Title
1969	**NMRU3-10**	**Some effects of louse-borne relapsing fever on the function of the heart**

(For abstract and documentation, see Ahmadu Bello University, Zaria, Nigeria.)

James Ewing Hospital, New York, NY

Start Date	Number	Title
1955	**ONR-24**	**Determination of the effect of high dosage betatron irradiation to the pituitary and hypothalamus in man**

Abstract: In March 1955, researchers at the Sloan-Kettering Institute for Cancer Research and the James Ewing Hospital, New York, NY, proposed to study the effects of high dosage betatron irradiation

NAVY 1944–1974 (CONTINUED)

James Ewing Hospital, New York, NY (continued)

to the pituitary and hypothalamus in humans. The objectives of this study were to determine whether betatron irradiation at a dosage of 12,000 to 15,000 rads would result in complete ablation of the pituitary and end-organ functions and to determine histological radiation changes of the pituitary, hypothalamus, and brain tissues. The number of participants is currently unknown; however, the proposal planned to use cancer patients hospitalized in the research and metabolic units of the James Ewing Hospital. Young patients with good nutrition, a life expectancy of more than six months, and intact gonadal, adrenal, and thyroidal functions were preferred. The proposal indicated that a twenty-three million volt betatron machine would be used to deliver 12,000 to 15,000 rads by a bitemporal route. The irradiation field would include the pituitary, the stalk, and the hypothalamus. It was also to include the tip of the temporal lobes of the cerebrum. It was expected that alteration of pituitary and end-organ functions would begin to occur at the end of six weeks to three months following the completion of irradiation. At the present time, no information is available on the results of this study.

Documents: From: John E. Flynn. To: Chief of Naval Research. Subject: Proposal on "Determination of the Effect of High Dosage Betatron Irradiation to the Pituitary and Hypothalamus in Man" from Sloan-Kettering Institute [includes related correspondence and research proposal]. Document Type: Memorandum. Date: 15 March 1955

Johns Hopkins University, Baltimore, MD

Start Date	Number	Title
1949	**ONR-42**	**X-ray camera for use on human centrifuge**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Kasr-el-Aini Hospital, Cairo, Egypt

Start Date	Number	Title
1966	**NMRU3-03**	**Bilharzial splenomegaly and refractory anemia**

(For abstract and documentation, see Cairo University, Cairo, Egypt.)

Start Date	Number	Title
1966	**NMRU3-24**	**Bilharzial splenomegaly and refactory anemia**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

NAVY 1944–1974 (CONTINUED)

Kasr-el-Aini Hospital, Cairo, Egypt (continued)

Start Date	Number	Title
1967	**NMRU3-22**	**Symptomatic, radiological, and functional improvement following treatment of urinary schistosomiasis in Egypt**

(For abstract and documentation, see Ain-Shams University, Cairo, Egypt.)

Start Date	Number	Title
1968	**NMRU3-18**	**Urinary blood loss in Schistosoma haematobium infection in Egyptian farmers**

Abstract: In 1968, researchers from the Naval Medical Research Unit 3 stationed in Cairo, Egypt, with investigators at Kasr-el-Aini Hospital in Cairo, Egypt, assessed blood and iron losses accompanying schistosomial infections. Eighteen Egyptian male patients infected with Schistosoma haematobium participated in this study. Iron-59 labeled red blood cells were used to measure urinary blood and iron loss. Results of this study are unavailable at this time.

Documents: Title: Urinary Blood Loss in Schistosoma Haematobium Infection in Egyptian Farmers. Document Type: Event Profile. Date: 1994

Start Date	Number	Title
Unknown	**NMRU3-14**	**Intestinal protein loss in schistosomal polyposis of colon**

Abstract: From a presently undetermined date until 1970, researchers from the Naval Medical Research Unit 3 stationed in Cairo, Egypt, with investigators at Kasr-el-Aini Hospital in Cairo, Egypt, determined the level of intestinal protein loss resulting from Schistosoma mansoni infections. Six male Egyptian patients with schistosomal infections accompanied by colonic polyposis participated. Chromium-51 labeled human albumin was used to measure intestinal protein loss. Excessive protein loss was shown in five of the six patients.

Documents: Title: Intestinal Protein Loss in Schistosomal Polyposis of Colon. Document Type: Event Profile. Date: 1994

Start Date	Number	Title
Unknown	**NMRU3-15**	**Chronic urinary Salmonella carriers with intermittent bacteraemia**

(For abstract and documentation, see Abbassia Fever Hospital, Cairo, Egypt.)

Start Date	Number	Title
Unknown	**NMRU3-16**	**Urinary schistosomiasis treated with niridazole (Ambilhar): quantitative evaluation**

(For abstract and documentation, see Abbassia Fever Hospital, Cairo, Egypt.)

NAVY 1944–1974 (CONTINUED)

Long Island Jewish Hospital, New Hyde Park, NY

Start Date	Number	Title
1958	**NHSTALB-14**	**Influence of chelates on the metabolism of radioyttrium**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1961	**NHSTALB-06**	**Therapy of multiple myeloma with radioyttrium**

Abstract: From 1961 until a presently undetermined date, researchers at the Long Island Jewish Hospital in New Hyde Park, NY, assessed the use of radioyttrium (Y-90) to treat bone lesions. Eleven patients with multiple myeloma participated in this clinical trial. All patients had largely become unresponsive to other modalities of therapy. Y-90 was administered intravenously as a simple dose of Y-90 (0.06 to 0.30 millicurie per kilogram) chelated with an excess of N'hydroxyethylenediamine triacetic acid and containing 0.05 milligram Y-89 per kilogram as a carrier. A good clinical response in the initial course was reported in six patients. Duration of remission was two to seventeen months, with subsequent courses unsuccessful. Researchers stated that, with the use of Y-90 as the initial agent or earlier in the course of the disease, remission could be more far reaching and retreatment more effective.

Documents: Authors: J. Greenber et al. Title: Therapy of Multiple Myeloma with Radioyttrium (Y-90). Journal: *Journal of Laboratory & Clinical Medicine*, vol. 59, issue 6. Document Type: Journal Article. Date: 1961

Massachusetts General Hospital, Boston, MA

Start Date	Number	Title
1948	**ONR-26**	**Intracellular changes in trauma, depletion and repair with special reference to burns**

(For abstract and documentation, see Harvard Medical School, Cambridge, MA.)

Start Date	Number	Title
1948	**ONR-38**	**Response of cells (Desquamate) to deep radiation**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
Unknown	**ONR-25**	**A study of cellular biochemistry in surgical patients**

(For abstract and documentation, see Harvard Medical School, Cambridge, MA.)

NAVY 1944–1974 (CONTINUED)

Massachusetts Institute of Technology, Cambridge, MA

Start Date	Number	Title
1948	**ONR-04**	**Effect of total thyroidectomy on function of metastatic thyroid cancer**

Abstract: In 1948, researchers at the Thyroid Clinic of Massachusetts Hospital in Boston, MA; Memorial Hospital and Sloan-Kettering Institute in New York, NY; and the Massachusetts Institute of Technology in Cambridge, MA, determined the effect of total thyroidectomy on metastatic thyroid cancer. Twenty-one patients participated in this study, which used trace amounts of radioactive iodine to diagnose thyroid cancer. Radiation exposures and results of this study are unavailable at this time.

Documents: Title: Effect of Total Thyroidectomy on Function of Metastatic Thyroid Cancer. Document Type: Event Profile. Date: 1994

Start Date	Number	Title
1949	**ONR-02**	**Circulating red cell volume and body hematocrit in normal pregnancy and puerperium by direct measurement, using radioactive red cells**

(For abstract and documentation, see Harvard Medical School, Cambridge, MA.)

Medical College of Virginia, Richmond, VA

Start Date	Number	Title
1955	**NNMC-096**	**High dose, preoperative supervoltage irradiation for osteogenic sarcoma**

Abstract: From 1955 to 1969, researchers from the Medical College of Virginia in Richmond, VA, and the National Naval Medical Center in Bethesda, MD, evaluated preoperative supervoltage radiation therapy in conjunction with surgery for treating osteogenic sarcoma. Seventeen patients with biopsy-confirmed osteogenic sarcoma participated in this study. Radiation therapy was by 2 MeV roentgen rays or by cobalt-60 beam, with treatment times varying from twenty-one to eighty-two days. Dosage administered was from 6,000 to 8,600 rads. Surgery was performed after irradiation in twelve of the seventeen patients. A combined approach in the management of osteogenic sarcoma offered a better chance of survival and appeared to be a more rational approach than any other single modality at the time.

Documents: Authors: R. Lewis Royster; Lt. Comdr., MC, USNR et al. Title: High Dose, Preoperative Supervoltage Irradiation for Osteogenic Sarcoma. Journal: Unknown, vol. 114, issue 3. Document Type: Journal Article. Date: March 1972

Meharry Medical College, Nashville, TN

Start Date	Number	Title
1948	**ONR-35**	**Study of treatment of neoplasm by direct infiltration with radio-active colloids**

Abstract: From March 1948 until February 1949, researchers at the Meharry Medical College, Nashville, TN, studied the treatment of neoplasms by direct infiltration with radioactive colloids. To date, no

NAVY 1944–1974 (CONTINUED)

Meharry Medical College, Nashville, TN (continued)

information is available on the number of participants. The direct infiltration of radioactive metallic gold colloids was carried out in a series of state three and four carcinomas with the intention of finding the beta ray tolerance of various types of tissue. The isotope used was gold-198 (Au-198). Au-198 was considered useful because, once instilled into the tissue, it remained at the point of deposition and allowed the irradiation from billions of point sources of beta radiation to the nearby tissues without affecting the surrounding normal tissue or other structures. The Au-198 had a cross section of thermal neutrons that was approximately from 100 to 200 times greater than that of most elements. It was therefore very economical to produce and presumably offered effective means of treating tumor tissue. This same colloid could be employed by the intravenous administration with the subsequent uptake by the phagocytic system, for treatment of diseases of the lymphoidmacrophage system such as in diseases of lymphosarcoma, Hodgkin's disease, and lymphatic leukemia.

Documents: Title: Study of Treatment of Neoplasm by Direct Infiltration with Radioactive Colloids. Document Type: Abstract. Date: 1949 est.

Memorial Hospital, Boston, MA

Start Date	Number	Title
1948	**ONR-04**	**Effect of total thyroidectomy on function of metastatic thyroid cancer**

(For abstract and documentation, see Massachusetts Institute of Technology, Cambridge, MA.)

Ministry of Health, United Arab Republic

Start Date	Number	Title
1969	**NMRU3-17**	**Histological and lymphangiographic studies in patients with clinical lepromatous leprosy**

Abstract: In 1969, researchers from the Naval Medical Research Unit 3 stationed in Cairo, Egypt, with investigators at St. Clare's Hospital in New York, NY, and the Leprosy Control Section of the Ministry of Health for the United Arab Republic studied clinical lepromatous leprosy. The histology of inguinal lymph nodes and bone marrow of lepromatous patients was characterized. Changes in histology were related to lymphangiographic (x-ray) findings in five of ten patients participating. Radiation exposures and results of this study are unavailable at this time.

Documents: Title: Histological and Lymphangiographic Studies in Patients with Clinical Lepromatous Leprosy. Document Type: Event Profile. Date: 1994

NAVY 1944–1974 (CONTINUED)

National Institutes of Health, Bethesda, MD

Start Date	Number	Title
Unknown	**NNMC-125**	**Total body retention of orally administered 47-calcium in primary hyperparathyroidism**

Abstract: From a presently undetermined date until 1974, researchers at the National Naval Medical Center and the National Institutes of Health, both in Bethesda, MD, studied total body retention of orally administered calcium-47 (Ca-47) tracer (one to three microcuries). The purpose of the study was to measure calcium retention in patients with various disorders of calcium metabolism. Researchers reported on Ca-47 retention in thirty-three patients with primary hyperparathyroidism, nine individuals with idiopathic hypercalciuria, three patients with hypercalcemia, and nineteen normal subjects. Using a whole-body radiation detector, the researchers measured the total body retention of Ca-47 seven days after oral administration of the isotope. The percent retention of Ca-47 varied with the calcium metabolic status of each patient. From these measurements, the researchers concluded that whole-body retention of orally administered Ca-47 may prove to be a useful tool in detecting hyperparathyroidism in patients with mild hypercalcemia or hypercalciuria.

Documents: Authors: L. E. Mallette et al. Title: Total Body Retention of Orally Administered 47-Calcium in Primary Hyperparathyroidism. Journal: *Journal of Clincial Endocrinol. Metab.*, vol. 40, issue 4. Document Type: Journal Article. Date: 1974

National Naval Medical Center, Bethesda MD

Start Date	Number	Title
1946	**NMRI-01**	**Biological basis of antimony compounds containing radioactive isotopes, the blood-tissue exchange, and excretion of antimony in humans given a single dose of tartar emetic**

Abstract: From 1946 until a presently undetermined date, researchers from the National Naval Medical Center in Bethesda, MD, evaluated the distribution and retention time of antimony in the human body. At the time, antimony was a standard treatment for parasites causing elephantiasis. Two male ambulatory patients from the U.S. Naval Hospital in Bethesda, MD, participated. The radioactive antimony was incorporated into tartar emetic, radioactivity was measured in blood and blood fractions, and total excretion was monitored. Organ uptake (e.g., brain, thyroid) was measured by an externally placed Geiger counter. Estimated radiological exposure was up to three roentgen per day.

Documents: Title: Biological Studies of Antimony Compounds Containing Radioactive Isotopes: III, the Blood-Tissue Exchange and Excretion of Antimony in Humans Given a Single Dose of Tartar Emetic [Report No. 1]. Document Type: Report. Date: 26 April 1946

NAVY 1944–1974 (CONTINUED)

National Naval Medical Center, Bethesda MD (continued)

Start Date	Number	Title
1950	**NNMC-003**	**Practical radioisotope therapy**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1951	**NNMC-105**	**Use of radioactive collodial gold (Au-196) in pleural effusions and ascites associated with malignancy**

Abstract: From 1951 to 1952, researchers from the National Naval Medical Center in Bethesda, MD, evaluated intracavitary administration of radioactive colloidal gold in malignancies involving the chest and abdominal cavities. Nineteen patients, both male and female, were treated. Doses of radiogold ranged from 41 to 148.8 millicuries, with some patients receiving more than one injection. Patient response to the therapy was encouraging, especially when treated before reaching a terminal state. From the results of the study, investigators concluded that intracavitary use of radioactive colloidal gold should be accepted as a valid radiotherapeutic procedure.

Documents: Authors: E. R. King et al. Title: The Use of Radioactive Colloidal Gold (Au-196) in Pleural Effusions and Ascites Associated with Malignancy. Journal: *American Journal of Roentgenology*, vol. 68, issue 3. Document Type: Journal Article. Date: September 1952

Start Date	Number	Title
1952	**NNMC-001**	**Preliminary report on the use of gallium-72 in clinical tracer studies**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1952	**NNMC-144**	**Radium inhalation accident—radium excretion study**

Abstract: From 1952 to 1956, researchers from the Naval Hospital in Bethesda, MD, studied the excretion of radium following accidental inhalation. Two patients admitted to the Naval Hospital following an accidental radium spill participated. The excretion of radium in one patient was followed for more than one year. Breath analysis for radon was considered to give a poor index of exposure in these cases. The amount of radium inhaled was estimated from excretion data. It was found that 76 percent of the inhaled radium was excreted in the first five days. Feces contained 97 percent of the eliminated radium. Excretion data illustrated the exponential decrease of the

NAVY 1944–1974 (CONTINUED)

National Naval Medical Center, Bethesda MD (continued)

coefficient of excretion. Suggestions for therapy were also made. The efficacy of different methods of determining the body radium content was reviewed.

Documents: Authors: W. B. Looney, M.D.; V. E. Archer, M.D. Title: Radium Inhalation Accident—Radium Excretion Study. Journal: *American Journal of Roentgenology*, vol. 75, issue 3. Document Type: Journal Article. Date: March 1956

Start Date	Number	Title
1955	**NNMC-004**	**Therapeutic use of radioisotopes from a practical level**

Abstract: In 1955, researchers from the National Naval Medical Center in Bethesda, MD, reviewed various treatments involving radionuclides and methods for selecting the appropriate isotope for treatment of various diseases. The therapeutic characteristics of phosphorus-32, gold-198, and iodine-131 were reviewed and compared. All were routinely used in clinical therapeutic procedures at the time. In selecting a radioisotope for clinical therapeutic administration, the following factors were considered: toxicity of the parent element, biochemical and chemical nature of the parent element, half-life of the radioisotope, energy and type of emissions of the radioisotope, and the probability of biologic localization of the isotope in the desired organ. Despite restrictions, the isotopes were found to furnish acceptable treatment for the following conditions: polycythema vera, chronic myelogenous leukemia, chronic lymphatic leukemia, effusions complicating spread of various malignant conditions to the serosal membranes of the body, hyperthyroidism, metastic thyroid cancer, and some forms of chronic heart disease.

Documents: Author: E. R. King, Capt., MC, USN. Title: The Therapeutic Use of Radioisotopes from a Practical Level. Journal: *Journal of American Geriatrics*, vol. IV. Document Type: Journal Article. Date: February 1956

Start Date	Number	Title
1955	**NNMC-096**	**High dose, preoperative supervoltage irradiation for osteogenic sarcoma**

(For abstract and documentation, see Medical College of Virginia, Richmond, VA.)

Start Date	Number	Title
1955	**NNMC-140**	**Late effects (25 to 40 years) of the early medical and industrial use of radioactive materials, part I**

Abstract: In 1955, researchers from the Naval Hospital in Bethesda, MD, conducted a retrospective study on the long-term effects of internally deposited radioactive materials from early medical and industrial use. Information was gathered from patients who had received radium for medical purposes and individuals who had been employed in the luminous-dial painting industry. To date, no information is available on the number of study participants. The clinical information served as a guide for diagnosis, management, and treatment of patients who received harmful amounts of radioactive materials. The radiobiological data obtained by refined techniques gave a better understanding of the manner in which changes were produced by internally deposited

NAVY 1944–1974 (CONTINUED)

National Naval Medical Center, Bethesda MD (continued)

radioactive elements. The information established more accurate maximum permissible levels of body burden for radioelements in use.

Documents: Title: Late Effects (25 to 40 Years) of the Early Medical and Industrial Use of Radioactive Materials, Part I. Document Type: Event Profile. Date: 1994

Start Date	Number	Title
1956	**NNMC-006**	**Present status of radioiodine in thyroid disease**

Abstract: In 1956, researchers at the National Naval Medical Center in Bethesda, MD, conducted an overview of the principal uses of radioiodine in the treatment and diagnosis of thyroid disease. The overview included the use of radioiodine across the general medical community and specific protocols for treatment at the National Naval Medical Center. The findings of several clinical thyroid studies were presented and the results compared to other research.

Documents: Title: Present Status of Radioiodine in Thyroid Disease. Document Type: Event Profile. Date: 1994

Start Date	Number	Title
1956	**NNMC-120**	**Use of radioisotopes in diagnostic hematologic studies**

Abstract: In 1956, researchers at the National Naval Medical Center in Bethesda, MD, studied the fate of radioactive iron, iron metabolism, and the distribution of labeled red blood cells (RBCs). To date, no information is available on the number of study participants. RBCs were drawn from patients, labeled with Fe-59, and reinjected. Rate of RBC production, total red cell volume, and RBC life spans were analyzed, and normal values for such studies were determined. The rate of Fe-59 disappearance from plasma, the incorporation of radioactive iron into RBCs, and the localization of Fe-59 in the bone marrow, liver, and spleen were assayed. Results of this study are unavailable at this time.

Documents: Title: Use of Radioisotopes in Diagnostic Hematologic Studies. Document Type: Event Profile. Date: 1994

Start Date	Number	Title
1956	**NNMC-141**	**Late effects (25 to 40 years) of the early medical and industrial use of radioactive materials, part II**

Abstract: In 1956, researchers from the Naval Hospital in Bethesda, MD, conducted a retrospective study on the long-term effects of internally deposited radioactive material from early medical and industrial use. Information was gathered from patients who had received radium for medical purposes and individuals who had been employed in the luminous-dial-painting industry. To date, no information is available on the number of study participants. The clinical information served as a guide for diagnosis, management, and treatment of patients who received or ingested harmful amounts of radioactive materials. The radiobiological data obtained by refined

NAVY 1944–1974 (CONTINUED)

National Naval Medical Center, Bethesda MD (continued)

techniques gave a better understanding of the manner in which changes were produced by internally deposited radioactive elements. The information established more accurate maximum permissible levels of body burden.

Documents: Title: Late Effects (25 to 40 Years) of the Early Medical and Industrial Use of Radioactive Materials, Part II. Document Type: Event Profile. Date: 1994

Start Date	Number	Title
1956	**NNMC-142**	**Late effects (25 to 40 years) of the early medical and industrial use of radioactive materials, part III**

Abstract: In 1956, researchers from the Naval Hospital in Bethesda, MD, conducted a retrospective study on the long-term effects of internally deposited radioactive material from early medical and industrial use. Information was gathered from patients who had received radium for medical purposes and individuals who had been employed in the luminous-dial-painting industry. To date, no information is available on the number of study participants. The clinical information served as a guide for diagnosis, management, and treatment of patients who received or ingested harmful amounts of radioactive materials. The radiobiological data obtained by refined techniques gave a better understanding of the manner in which changes were produced by internally deposited radioactive elements. The information established more accurate maximum permissible levels of body burden.

Documents: Title: Late Effects (25 to 40 Years) of the Early Medical and Industrial Use of Radioactive Materials, Part III. Document Type: Event Profile. Date: 1994

Start Date	Number	Title
1956	**NMRI-15**	**Beta radiation lesion of the skin**

Abstract: In 1956, researchers at the Naval Medical Research Institute in Bethesda, MD, presented the case report of an Air Force officer who developed a skin lesion several weeks after an accident involving the spillage of radioactive materials. The officer, who was in charge of the transportation of radioactive samples from the Pacific proving grounds to the United States, developed a skin lesion on his forehead and right eyebrow region. Upon examination, physicians observed erythema, dry scaly desquamation, depigmentation, symptoms of burning and itching, increased sensitivity to sunlight, hyperesthesia, and epilation of the eyebrows (with regrowth of hair). These symptoms and the minimal histological changes, seen particularly in the elastic tissue, were considered consistent with radiation damage to the skin. A diagnosis of beta radiation lesion was made. Physicians also noted regrowth of white hair in the affected region of the right eyebrow, which was formerly black in color. This feature had been previously noted in irradiated animals but not in humans. Investigators considered it worthwhile to present the case because lesions resulting from this type of contamination were thought to be more commonly encountered as a result of the increasingly widespread use of atomic energy at the time.

Documents: Authors: Robert A. Conard, Capt., USN; Carl F. Tessmer, Lt. Col., MC. Title: Beta Radiation Lesion of the Skin. Document Type: Report. Date: 6 February 1956

Authors: Robert A. Conard, M.D.; Carl F. Tessmer, M.D. Title: Beta Radiation Lesion of the Skin. Journal: *A.M.A. Archives of Dermatology,* vol. 76, no. 6. Document Type: Journal Article. Date: December 1956

NAVY 1944–1974 (CONTINUED)

National Naval Medical Center, Bethesda MD (continued)

Start Date	Number	Title
1957	**NNMC-005**	**Evaluation of pancreatic exocrine function and intestinal absorption with radioactive fat**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1957	**NNMC-007**	**Use of radioisotopes in diagnostic hematological procedures. [Part I] The application of the B-12 Co-60 test in the diagnosis of macrocytic anemia's and malabsorption states**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
Unknown	**NNMC-117**	**Evaluation of battery of thyroid function studies**

Abstract: From a presently undetermined date until 1974, researchers from the National Naval Medical Center in Bethesda, MD, conducted a retrospective study. The purpose of the study was to evaluate a number of thyroid function studies conducted by the Radioisotope Laboratory at the U.S. Naval Hospital in Bethesda, MD. From October 1948 to October 1956, more than 2,500 iodine-131 (I-131) thyroid studies were performed. Concerned with the variable results inherent in procedures used in thyroid function evaluation, researchers sought to improve the overall degree of accuracy in thyroid testing by identifying the most reliable techniques. Researchers reviewed material from more than 400 cases of patients referred to the Radioisotope Laboratory for thyroid function evaluation. Patients were interviewed, physically evaluated, and given a tracer dose of forty microcuries of I-131 on fasting stomach. After twenty-four hours, studies of twenty-four hour uptake, protein bound I-131 (PBI-131) conversion ratio, saliva PBI-131 ratio, and chemical PBI were performed. Clinical diagnosis was then compared to laboratory diagnosis. From this review of thyroid function studies, the researchers concluded that careful radioisotope procedures with the most reliable results were of little value unless the clinician was aware of the procedures' limitations. Researchers felt that the laboratory should not serve as a substitute for good history taking and careful physical examination and that thyroid function studies involving radioiodine complement the clinician's opinion and confirm diagnosis to a high degree of accuracy.

Documents: Authors: Lt. Charles R. Henkelmann, M.C. et al. Title: Evaluation of a Battery of Thyroid Function Studies. Journal: *Medical Annals of the District of Columbia*, vol. 26, issue 4. Document Type: Journal Article. Date: April 1957

NAVY 1944–1974 (CONTINUED)

National Naval Medical Center, Bethesda MD (continued)

Start Date	Number	Title
Unknown	**NNMC-118**	**Tumor localization with radioisotopes**

Abstract: From a presently undetermined date until 1957, researchers from the U.S. Naval Hospital, National Naval Medical Center in Bethesda, MD, conducted a review of the efficiency of radioisotopes in defining the extent of tumors in various areas of the body. The researchers reported on the advantages and disadvantages of several isotopes in the evaluation of various types of tumors. An example of a gallium scan done on a sixty-seven-year-old man with prostatic carcinoma with metastases to the bone was also presented in the review.

Documents: Authors: E. R. King, Capt., MC, USN; C. R. Henklemann, Lt., MC, USNR. Title: Tumor Localization with Radioisotopes. Journal: *Southern Medical Journal*, September 1957. Document Type: Journal Article. Date: September 1957

Start Date	Number	Title
1960	**NNMC-087**	**Use of total-body radiation in the treatment of far-advanced malignancies**

(For further information, see Chapter 2—"Total-Body and Partial-Body Irradiation Studies.")

Documents: Author: Capt. E. Richard King, MC, USN. Title: Use of Total-Body Radiation in the Treatment of Far-Advanced Malignancies. Journal: *The Journal of the American Medical Association*, vol. 177, no. 9. Document Type: Journal Article. Date: 2 September 1961

Start Date	Number	Title
1960	**NNMC-088**	**Taurine excretion in humans treated by total-body radiation**

(For further information, see Chapter 2—"Total-Body and Partial-Body Irradiation Studies.")

Documents: Authors: Lt. Ralph R. Cavalieri, MC, USNR; Milton Van Metre, Lt., MSC, USN; Capt. R. W. Chambers, Jr., MSC, USN; Capt. E. Richard King, MC, USN. Title: Taurine Excretion in Humans Treated by Total-Body Radiation. Journal: *Journal of Nuclear Medicine*, vol. 1. Document Type: Journal Article. Date: 1960

Start Date	Number	Title
1960	**NNMC-089**	**Hyaline membrane following total-body radiation: relation to lung plasminogen activator**

(For further information, see Chapter 2—"Total-Body and Partial-Body Irradiation Studies.")

Documents: Authors: W. H. Fleming; J. E. Szakacs; T. C. Hartney; E. R. King. Title: Hyaline Membrane Following Total Body Radiation. Relation to Lung Plasminogen Activator. Journal: *The Lancet*, vol. 2, issue 5. Document Type: Journal Article. Date: 5 November 1960

NAVY 1944–1974 (CONTINUED)

National Naval Medical Center, Bethesda MD (continued)

Start Date	Number	Title
1962	**NNMC-109**	**Tuberculin conversion**

Abstract: From 1962 until a presently undetermined date, researchers from the National Naval Medical Center in Bethesda, MD, surveyed immune responses to tuberculin in shipboard Navy personnel after a suspected case of active tuberculosis was reported in a fellow crew member. The tuberculin response of nearly 1,000 men on board the USS *Long Beach*, berthed in Philadelphia, PA, was followed for one year. Mantoux tuberculin tests were done on the entire crew following the diagnosis of the one active case. All negative reactions were retested a second time, with further retesting at one-and-one-half, three, six, and twelve month intervals. Standard chest x-rays were obtained for all tuberculin-positive personnel and were repeated with each succeeding study. The incidence of tuberculin seroconversion was found to be high even though no active tuberculosis was detected. Most of the men manifesting seroconversion had tuberculin reactions that were weak and highly variable. Researchers concluded that cross-reactions from nontuberculous organisms must be considered when evaluating tuberculin test results obtained in the investigation of tuberculosis. The findings of the study were published in 1967.

Documents: Author: Lt. Cmdr. Charles W. Och, MC, USN. Title: Tuberculin Conversion. Journal: *The Journal of the American Medical Association*, vol. 200, no. 12. Document Type: Journal Article. Date: 19 June 1967

Start Date	Number	Title
1964	**NNMC-134**	**Aortic insufficiency and pelvospondylitis in a seropositive female with rheumatoid nodules**

Abstract: From 1964 to 1970, researchers at the Naval Hospital in Bethesda, MD, the Naval Hospital in Portsmouth, VA, and the Medical College of Virginia School of Medicine presented a case report on one forty-five-year-old woman with seropositive, nodular rheumatoid arthritis who had pelvospondylitis and symptomatic aortic insufficiency. X-ray changes of the pelvospondylitis suggested ankylosing spondylitis.

Documents: Authors: Wood. G. Van Valkenburgh et al. Title: Aortic Insufficiency and Pelvospondylitis in a Seropositive Female with Rheumatoid Nodules. Journal: *Arthritis and Rheumatism*, vol 15, no. 5, issue September-October 1972. Document Type: Journal Article. Date: September-October 1972

Start Date	Number	Title
1966	**NNMC-116**	**Air cholangiogram as unusual sequela to thoracocentesis**

Abstract: In 1969, researchers at the National Naval Medical Center in Bethesda, MD, presented a case report on one thirty-three-year-old man treated for pneumonia at an unidentified hospital. A massive right pleural effusion developed despite therapy, and thoracocentesis was attempted. To define the level of the diaphragm and guide reinsertion of the thoracocentesis needle, twenty milliliters of air was injected. During the procedure, air was inadverently introduced beneath the diaphragm and into the liver capsule. X-rays taken following the procedure showed a subdiaphragmatic collection of air; the following day, x-rays showed the development of air

NAVY 1944–1974 (CONTINUED)

National Naval Medical Center, Bethesda MD (continued)

within the gall bladder and bile ducts (air cholangiogram). X-rays taken on the third day after the procedure showed no air. The patient was then transferred to the Naval Hospital, Bethesda, where a large quantity of purulent material was removed by multiple thoracocentesis. With continued antibiotic therapy, the patient recovered and was discharged.

Documents: Authors: Lt. Cmdr. Elliot Perlin, MC, USN et al. Title: The Air Cholangiogram as an Unusual Sequela to Thoracocentesis. Journal: *The Journal of the American Medical Association*, vol. 210, no. 12. Date: 22 December 1969

Title: Medline Express: The Air Cholangiogram as an Unusual Sequela to Thoracocentesis. Document Type: Search Printout. Date: 1994

Start Date	Number	Title
1971	**NNMC-097**	**Enhanced blood coagulation and fibrolysis in a patient with amyloidosis**

(For abstract and documentation, see Armed Forces Radiobiology Research Institute, Bethesda, MD.)

Start Date	Number	Title
Unknown	**NNMC-008**	**Use of radioisotopes in diagnostic hematologic procedures, Fe-59 erythrokinetic studies**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
Unknown	**NNMC-009**	**Use of radioisotopes in diagnostic hemotologic procedures, simultaneous Cr-51 and Fe-59 studies**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
Unknown	**NNMC-012**	**Pancreatic exocrine function: a simplified test using radioactive fat excretion**

Abstract: From a presently undetermined date until 1957, researchers at the Naval Hospital in Bethesda, MD, conducted this study. The purpose of the investigation was to develop a nuclear medicine test to evaluate pancreatic function. The twenty-one male and female patients who participated in the study ranged in age from eleven to seventy years old. Pancreatic digestion was determined through the use of the radioiodinated fat, triolein-iodine-131 (triolein-I-131). Adult patients were given twenty-five microcuries of radioactive fat (child: five microcuries). The products of the fat digestion, which still retain the I-131, are normally absorbed by the intestinal

NAVY 1944–1974 (CONTINUED)

National Naval Medical Center, Bethesda MD (continued)

walls. Failure to readily absorb the tagged fat was detected by I-131 in stool specimens and was indicative of pancreatic exocrine malfunction. Patients drank a suspension of charcoal and Lugol's solution to indicate intestinal passage and reduce uptake of I-131 by the thyroid and then ingested the triolein-I-131 in a carrier of peanut oil-emulsifying agent-water. Elevated excretion of the product was observed in patients with chronic pancreatitis, malabsorption syndromes, and subtotal gastrectomies.

Documents: Authors: Richard P. Spencer, Lt., MC, USNR; Thomas G. Mitchell, Lt., MSC, USN. Title: Pancreatic Exocrine Function: A Simplified Test Using Radioactive Fat Excretion. Journal: *American Journal of Digestive Disease*, vol. 2, issue 12. Document Type: Journal Article. December 1957

Start Date	Number	Title
Unknown	**NNMC-014**	**Late follow-up studies after internal deposition of radioactive material**

Abstract: From a presently undetermined date until 1956, researchers at the National Naval Medical Center in Bethesda, MD conducted a pilot study of the long-term effects of thorotrast, a radioactive contrast medium and a colloidal suspension of thorium dioxide. Thirty-five patients participated in this follow-up study thirty-five years after exposure. Participants did not receive new exposures to thorium or radium during the course of this retrospective study; however, they did receive x-rays as a part of this study. The researchers found that thorium was deposited in the reticuloendothelial system and remained throughout the life of the patient. The major sites of deposition were the liver, spleen and bone marrow. Increased density of the liver and spleen were usually found on roentgenographic examination. Induration and contraction may have been present at the sites of injection in the neck and arms. A small number of primary hepatic tumors, leukemias, and hematological disorders were found. These results led the researchers to call for further studies of large numbers of patients in order to determine if the number of the disorders was significant when compared to suitable control groups.

Documents: Authors: William B. Looney; Martin Colodzin. Title: Late follow-up studies after internal deposition of radioactive materials: Journal: *Journal of the American Medical Association*, vol. 160, issue 1. Document Type: Journal Article. Document Date: 07 January 1956

Start Date	Number	Title
Unknown	**NNMC-015**	**Excretion of thorium and thorium daughters after Thorotrast administration**

Abstract: From a presently undetermined date until 1956, researchers at the National Naval Medical Center in Bethesda, MD, investigated the excretion of thorium and thorium decay products after Thorotrast administration. Conclusions were based on whole-body studies in two patients and additional analysis of individual organ uptake. Based on these analyses and further calculations, results suggested ways that this information could benefit use of and knowledge relating to Thorotrast dosimetry. This study helped identify those tissues that, because of high thorium content, should be regarded as particularly vulnerable and furnished a basis for calculation of the average dose rate to vulnerable organs. Further guidance was provided for calculations of integral dose, taking into account thorium excretion and tissue redistribution.

Documents: Title: Excretion of Thorium and Thorium Daughters After Thorotrast Administration. Document Type: Event Profile. Date: 1994

NAVY 1944–1974 (CONTINUED)

National Naval Medical Center, Bethesda MD (continued)

Start Date	Number	Title
Unknown	**NNMC-020**	**Whole body retention of orally administered calcium-47**

Abstract: From a presently undetermined date until 1972, researchers from the National Naval Medical Center in Bethesda, MD, developed a method for measuring calcium retained after oral ingestion. One-hundred-two patients participated. Calcium-47 retention was measured by whole-body counting and analysis of turnover rates in plasma. Comparison of calcium retention measurements helped distinguish hyperparathyroidism, sarcoidosis, and excessive calcium excretion in urine. The test was reproducible, required small doses of tracer, and was suitable for outpatient work.

Documents: Authors: J. Sode et al. Title: Whole Body Retention of Orally Administered Calcium-47. Journal: *U. S. Navy Medicine*, vol. 59. Document Type: Abstract. Date: June 1972

Start Date	Number	Title
Unknown	**NNMC-021**	**Total body potassium (K) as a reference standard for normality of red blood cell mass**

Abstract: From a presently undetermined date until 1962, researchers from the National Naval Medical Center in Bethesda, MD, investigated a more accurate method of determining red cell mass (RCM). This study correlated total-body (naturally occurring) potassium-42 to RCM determined by chromium-51 labeling. Researchers compared measurements of total-body potassium (TBK) to weight as an indicator of RCM. Seventeen individuals participated. Findings indicated that TBK was a better reference standard for normality of RCM than body weight.

Documents: Authors: J. Sode et al. Title: Total Body Potassium (K) as a Reference Standard for Normality of Red Blood Cell Mass. Journal: *U. S. Navy Medicine*. Document Type: Abstract. Date: 1962

Start Date	Number	Title
Unknown	**NNMC-085**	**Studies of radiogallium as a diagnostic agent in bone tumors**

Abstract: From a presently undetermined date until 1951, researchers at the National Naval Medical Center in Bethesda, MD, used gallium-72 (radiogallium, Ga-72) to identify lesions in bone. Beyond development of methods for detecting localized Ga-72 in the body, this study also quantified Ga-72 localization in cancerous bone lesions in eighteen patients. Geiger counting techniques were applied to the skin surface to detect accumulations of radiogallium. Intravenous tracer doses of Ga-72 were selectively concentrated within osteogenic and osteolytic bone lesions in fifteen of eighteen cases of primary and secondary bone malignancies. Early metastases to bone were identified with tracer Ga-72 before changes could be detected by x-ray films. Concentration of tracer amounts of Ga-72 in malignancies involving bone was nearly 20 times that found in adjacent bone.

Documents: Authors: Comdr. W. C. Mulry, MC, USN; Comdr. H. C. Dudley, MSC, USN. Title: Studies of Radiogallium as a Diagnostic Agent in Bone Tumors. Journal: *Journal of Laboratory & Clinical Medicine*, vol. 37, issue 2. Document Type: Journal Article. Date: February 1951

NAVY 1944–1974 (CONTINUED)

National Naval Medical Center, Bethesda MD (continued)

Start Date	Number	Title
Unknown	**NNMC-086**	**Thyroid parameters during triiodothyronine**

Abstract: From a presently undetermined date until 1957, researchers at the National Naval Medical Center in Bethesda, MD, examined iodine uptake in normal and hyperthyroid individuals before and after triiodothyronine administration. Studies were conducted on twenty-four-hour iodine-131 (I-131) uptake, serum radioiodine conversion ratio, saliva protein-bound iodine (PBI-131), and chemical PBI. Twenty-six clinically euthyroid and hyperthyroid patients participated. One hundred microcuries of I-131 were given orally in distilled water to the fasting patients. Thyroid I-131 uptake was determined twenty-four hours later, and blood and saliva samples were collected for analysis. Patients then took twenty-five micrograms of triiodothyronine three times a day for eight days. Before the second set of studies was conducted, background readings from the thyroid, blood, and saliva were obtained to correct for residual radioactivity from the first tests. A second 100-microcurie dose of I-131 was then administered, and the tests were repeated. Results showed that diagnosis of hyperthyroidism based solely on twenty-four-hour I-131 uptake is insufficient in some non-thyrotoxic patients, and the serum radioiodine conversion ratio clearly delineated hyperthyroidism. No correlation was found between pre- and post-suppression values in chemical PBI. With patients of sufficient diagnostic difficulty to warrant a triiodothyronine study, additional tests should be given for conversion ratio and saliva PBI as well as twenty-four-hour I-131 uptake.

Documents: Title: Thyroid Parameters During Triiodothyrinine. Document Type: Event profile. Date: 1994

Start Date	Number	Title
Unknown	**NNMC-090**	**Photoscanning of bone lesions utilizing strontium-85**

Abstract: From a presently undetermined date until 1961, researchers from the National Naval Medical Center in Bethesda, MD, evaluated the feasibility of detecting fractures, metastatic cancer, eosinophilic granulomas, chondromas, osteomyelitis, and Paget's disease by photoscanning selected skeletal areas using strontium-85 (Sr-85). This study was the first published report of an actual bone scan. Two hospitalized patients participated. Between twenty and sixty microcuries of Sr-85 were given intravenously. Twenty-four hours after administering the isotope, scanning was conducted with a Picker magnascanner. This delay allowed for localization of the isotope. Results showed that photoscanning of bone lesions was practical, desirable, and informative. Sr-85 localization appeared to occur only in areas of increased osteoblastic activity and was thereby considered an excellent means of evaluating bone repair.

Documents: Authors: Lt. Comdr. William H. Fleming, MC, USNR et al. Title: Photoscanning of Bone Lesions Utilizing Strontium-85. Journal: *Radiology*, vol. 77. Document Type: Journal Article. Date: October 1961

Start Date	Number	Title
Unknown	**NNMC-091**	**Therapeutic trials of radiogallium (Ga-72)**

Abstract: From a presently undetermined date until 1952, researchers from the National Naval Medical Center and the Naval Medical Research Institute in Bethesda, MD, evaluated cancer using gallium-72

NAVY 1944–1974 (CONTINUED)

National Naval Medical Center, Bethesda MD (continued)

(radiogallium, Ga-72), which localizes in bone lesions. Four adult cancer patients participated. One milliliter of radiogallium citrate solution was administered intravenously by a gravity-flow arrangement. Urine was collected at twenty-four-hour intervals for ninety-six hours after injection, and the retention of Ga-72 was estimated by radioassay performed on the urine specimens. Results of the study showed that stable-gallium toxicity limits the amount of radiogallium that can be administered. Consequently, Ga-72 was not considered to be an effective therapeutic agent.

Documents: Authors: Comdr. E. R. King, MC, USN; Lt. L. W. Brady, MC, USN; Comdr. H. C. Dudley, MC, USN. Title: Therapeutic Trials of Radiogalium (Ga-72). Journal: *American Medical Association Archives of Internal Medicine*, vol. 90. Document Type: Journal Article. Date: December 1952

Start Date	Number	Title
Unknown	**NNMC-092**	**Tc-99m-EHDP bone scanning in breast cancer**

Abstract: The inclusive dates for this study conducted at the National Naval Medical Center in Bethesda, MD, are presently undetermined. Researchers evaluated preoperative and postoperative bone scans performed with technetium-99m (Tc-99m) compounds in the management of breast cancer. One hundred fifteen female patients with biopsy proven carcinoma had preoperative bone scans. Whole-body dual-probe rectilinear scans taken three to five hours after a fifteen millicurie administration of Tc-99m-polyphosphate or Tc-99m-EHDP were supplemented as needed with gamma camera images. The low incidence (5 percent) of positive preoperative bone scans in the series may have been related to early diagnosis, as 109 of the 115 patients were operative stage I or II. The high incidence of negative to positive conversions postoperatively (23 percent) indicated the value of serial postoperative scanning and underscored the importance of a preoperative baseline scan. The incidence of bone metastases was much higher in post-menopausal patients with breast carcinoma, both pre- and post-operatively.

Documents: Authors: Frederic H. Gerber; James J. Goodreau; Peter T. Kirchner. Title: Tc-99m-EHDP Bone Scanning in Breast Carcinoma. Journal: *Journal of Nuclear Medicine*, vol. 16, no. 6. Document Type: Journal Article. Date: Unknown

Start Date	Number	Title
Unknown	**NNMC-093**	**Diagnosis of obstructive uropathy with serial Anger camera images**

Abstract: The inclusive dates for this study conducted at the National Naval Medical Center in Bethesda, MD, are presently undetermined. Researchers employed rapid sequence imaging of the urinary tract with the Anger camera after intravenous injection of chelated radionuclides (ytterbium-169-DTPA, indium-131m-DTPA, technetium-99m-DTPA) to diagnose urinary tract obstructions. Thirty patients participated. Final diagnoses were based on a combination of clinical follow-up, excretory urograms, retrograde pylograms, and operative or autopsy findings. In twenty-six of thirty patients, the rapid sequence of radionuclide images correctly predicted the presence of ureteropelvic or uretal obstruction or caliectasis in the absence of obstruction and often allowed determination of kidney size.

Documents: Authors: P. T. Kirchner et al. Title: Diagnosis of Obstructive Uropathy with Serial Anger Camera Images. Journal: *Journal of Nuclear Medicine*, vol. 12, issue 6. Document Type: Journal Article. Date: Unknown

NAVY 1944–1974 (CONTINUED)

National Naval Medical Center, Bethesda MD (continued)

Start Date	Number	Title
Unknown	**NNMC-094**	**Kinetics of chelated radiopharmaceuticals in cisternography**

Abstract: The inclusive dates for this study conducted at the National Naval Medical Center in Bethesda, MD, are presently undetermined. As chelated tracers (CTs) are commonly used in cisternography, the rate and site of absorption of tracer from cerebrospinal fluid (CSF) and biological half-life are important data for both diagnostic and dosimetric purposes. Researchers studied tracer kinetics in a presently undetermined number of patients undergoing cisternographic studies with ytterbium-169-DTPA. Serial whole-body counting, serial blood samples, and serial quantification of spinal and head activity over a forty-eight to seventy-two-hour period were performed. Researchers determined that CTs may be absorbed from the CSF into the blood, not only in the parasagittal areas but also at lower levels in the lumbothoracic area. The amount of CT that reaches the basal cistern, ventricles, and parasagittal areas depends in part on the rate of absorption at lower levels. Researchers attributed variable lumbar absorption rates in different patients to possibe leakage of CSF from the subarachnoid space to extracellular fluid at the injection site.

Documents: Authors: Peter T. Kirchner; K. McKusick; H. N. Wagner, Jr. Title: Kinetics of Chelated Radiopharmaceuticals in Cisternography. Journal: *Journal of Nuclear Medicine*, vol. 13, issue 6. Document Type: Journal Article. Date: Unknown

Start Date	Number	Title
Unknown	**NNMC-106**	**Circulating white blood cell volume in leukemia**

Abstract: From a presently undetermined date until 1958, researchers from the Naval Hospital in Bethesda, MD, investigated the development of a method to adequately indicate the status of an anemia. Researchers evaluated two techniques for determining white blood cell (WBC) volume. Two male patients, one with chronic lymphatic leukemia and one with chronic granulocytic anemia, participated. The patient with leukemia was treated with irradiation of the spleen, and both were given therapeutic doses of radiophosphorous. The first method involved determining WBC volume by tagging red blood cells (RBCs) with fifty microcuries of radiochromium (Cr-51) and calculating the difference between total volume and red cell plus plasma volume. Whole blood was mixed with Cr-51, and the patients' own RBCs were separated out and reinjected. Twenty minutes after reinjection, venous blood was drawn for hematocrit determination and scintillation counting. A second technique, specifically labeling the WBCs, was found to have serious limitations and was therefore not used. Researchers found that WBC volume generally paralleled the peripheral white cell count but that discrepancies between the two deserved further study.

Documents: Authors: Richard P. Spencer, Lt., MC, USNR et al. Title: Circulating White Blood Cell Volume in Leukemia. Journal: *U.S. Armed Forces Medical Journal*, vol. IX, no. 2. Document Type: Journal Article. Date: February 1958

NAVY 1944–1974 (CONTINUED)

National Naval Medical Center, Bethesda MD (continued)

Start Date	Number	Title
Unknown	**NNMC-108**	**Serum iron binding in the presence of cryoglobulin**

Abstract: The inclusive dates for this study conducted at the National Naval Medical Center in Bethesda, MD, are presently undetermined. Investigators examined whether the immunoglobulin, cryoglobulin, would bind iron or interfere with normal iron handling. A case report was presented from one twenty-five-year-old female patient with Hodgkin's disease. Forty microcuries of iron-59 (Fe-59) were administered intravenously. Two hours after injection, blood was drawn and cryoglobulin isolated. Three minute counts with a scintillation counter were performed. Researchers determined plasma iron binding to be specific, as Fe-59 added to the blood was not bound by cryoglobulin, and no increased Fe-59 counts could be demonstrated in the gamma-globulin fraction of the patient's blood proteins.The study was published in 1957.

Documents: Authors: Richard P. Spencer; Donald R. Davis. Title: Serum Iron Binding in the Presence of a Cryoglobulin. Journal: *Clinica Chemica Acta*, vol. 2, issue 1957. Document Type: Journal Article. Date: 1957

Start Date	Number	Title
Unknown	**NNMC-115**	**Radioisotopic monitoring of intrathecal methotrexate (MTX)**

Abstract: The inclusive dates for this study conducted at the National Naval Medical Center in Bethesda, MD, are presently undetermined. Intrathecal administration of methotrexate (MTX) in the therapy of leukemia was investigated. The technique estimated the amount of MTX reaching the intracranial cerebrospinal fluid (CSF) space by monitoring the movement of a radioactive tracer routinely used in cisternography, indium-111-chelate (In-111), injected with MTX. Six children and three adults with leukemia or lymphoma received a total of thirty-six injections of MTX-In-111 mixture via lumbar puncture followed by serial gamma camera images of the spine and head. Lumbar intrathecal injection was found to be highly unreliable for intracranial delivery of MTX and possibly other drugs. The radioisotopic monitoring allowed for a quantitative assessment of drug movement following lumbar CSF injection. The study was published in 1972.

Documents: Subject: Radioisotopic Monitoring of Intrathcal Methotrexte (MTX) Therapy. Document Type: Abstract. Date: 1972 est.

Start Date	Number	Title
Unknown	**NNMC-125**	**Total body retention of orally administered 47-calcium in primary hyperparathyroidism**

(For abstract and documentation, see National Institutes of Health, Bethesda, MD.)

NAVY 1944–1974 (CONTINUED)

National Naval Medical Center, Bethesda MD (continued)

Start Date	Number	Title
Unknown	**NNMC-136**	**Radioisotopic localization of the placenta with indium (In-113m)**

Abstract: The inclusive dates for this study proposed by researchers from the National Naval Medical Center, Bethesda, MD, are presently undetermined. The purpose of the study was to localize placenta using indium-113m (In-113m) to aid in the management of cases of antepartum bleeding. One millicurie of In-113m was to be mixed with the threshold volume of patients' plasma and be reinjected into the patient. After ten minutes, a photoscan of the abdomen was to be taken. Researchers felt that In-113m had an advantage over other radioisotopes in this procedure because of its rapid decay, shorter half-life, and higher photon output, yet a reduced amount of absorbed radiation from an initially small dose injected. To date, no information is available on the number of study participants.

Documents: Authors: Comdr. R. C. Cefalo et al. Title: Radioisotopic Localization of the Placenta with Indium (In-113m). Document Type: Proposal. Date: 1964–68 est.

Start Date	Number	Title
Unknown	**NNMC-139**	**Autoradiographic and histopathological studies of thorium dioxide patients**

Abstract: From a presently undetermined date until 1955, researchers from the Naval Hospital in Bethesda, MD, the University of Utah, and the University of Copenhagen in Denmark studied biopsy material from two patients who had died ten and nineteen years after diagnostic thorium dioxide (thorotrast) administration. Materials were studied histopathologically, autoradiographically, and radiochemically. Researchers hoped to learn of the late effects of thorium dioxide in order to protect personnel who may be exposed to thorium.

Documents: Author: Lt. William B. Looney, MC, USNR. Title: The Initial Medical and Industrial Use of Radioactive Materials (1915–1940). Journal: Unknown. Document Type: Journal Article. Date: November 1954

Authors: Lt. W. B. Looney, MC, USNR; J. S. Arnold; H. Levi; W. S. Jee. Title: Autoradiographic and Histopathological Studies of Thorium Dioxide Patients. Journal: *A.M.A. Archives of Pathology*, vol. 60. Document Type: Journal Article. Date: 1955

Start Date	Number	Title
Unknown	**NNMC-143**	**Investigation of late clinical findings following Thorotrast (thorium dioxide) administration**

Abstract: From a presently undetermined date until 1960, researchers at the Naval Hospital in Bethesda, MD, investigated long-term effects following Thorotrast (thorium dioxide) administration. Thorotrast patients were an important source of clinical material for evaluation of the effects of continuous low level irradiation. In view of its potential use as breeder material in nuclear reactors, information was needed regarding radiobiologic aspects of thorium. Information about radium isotopes of the thorium decay series was needed because of their presence in the

NAVY 1944–1974 (CONTINUED)

National Naval Medical Center, Bethesda MD (continued)

skeletons of luminous-dial workers. Biological information about any member of the actinide series improved the understanding of the whole group (e.g., plutonium, uranium). Thorium patients constituted a source of clinical data in the evaluation of maximum permissible levels of body burden for radioelements currently used. A total of thirty-five patients participated. The results indicated there were relatively few deleterious effects directly attributable to Thorotrast in these patients. The occurrence of one, and presumably two, rare hepatic tumors of mesodermal origin in this series of patients indicated that a relationship existed between Thorotrast administration and hepatic tumor induction. These hepatic tumors emerged as the predominant tumors in Thorotrast patients. A better understanding of chemical and radiation carcinogenesis would answer whether tumor induction in Thorotrast patients was the result of the presence of thorium, a result of radiation from the thorium decay series, or a combination of both. Because Thorotrast was widely used in the United States, coordinated follow-up studies nationwide were recommended.

Documents: Title: Investigation of Late Clinical Findings Following Thorotrast (Thorium Dioxide) Administration. Document Type: Event Profile. Date: 1994

National Tsing Hua University, Hsinchu, Taiwan

Start Date	Number	Title
1972	**NMRU2-09**	**Cesium-137 turnover rates in human subjects of different ages**

Abstract: In 1972, researchers at the Naval Medical Reseach Unit Number 2 stationed in Taipei, Taiwan, and the National Tsing Hua University in Hsinchu, Taiwan, studied cesium-137 (Cs-137) turnover rates in humans. A family of five participated in the study. The members of the family were a forty-year-old male, a thirty-nine year old female, and three male children, twelve, ten, and six years old. The family had lived in a home where radioactive contamination was detected. A one gram cesium chloride source, purchased from Oak Ridge National Laboratory and dispensed by a medical doctor, had been stored in a lead-shielded container in a corner of the family's kitchen for more than ten years. During that time, the house was flooded twice by water. As a result, the container corroded and leaked, allowing contamination to spread throughout the house and surrounding grounds. After the source was discovered, it was removed and the area decontaminated. Initial Cs-137 body burdens in family members were estimated by whole-body counting. Arrangements were then made to follow the turnover rates of Cs-137 in the family members by periodically estimating their Cs-137 body burden from twenty-four hour Cs-137 urinary excretion and whole-body counting. Data indicated a correlation between the rate of biological turnover and age of the participant.

Documents: Title: Cesium-137 Turnover Rates in Human Subjects of Different Ages. Document Type: Search Printout. Date: 1994 est.

Authors: P. S. Weng; W. M. Beckner. Title: Cesium-137 Turnover Rates in Human Subjects of Different Ages. Journal: *Health Physics,* vol. 25, no. 6. Document Type: Journal Article. Date: December 1973

NAVY 1944–1974 (CONTINUED)

National Tsing Hua University, Hsinchu, Taiwan (continued)

Start Date	Number	Title
Unknown	**NMRU2-03**	**Muscle copper, zinc, and manganese levels in Wilson's disease: studies with use of neutron activation analysis**

Abstract: From a presently undetermined date until 1970, researchers at the Naval Medical Research Unit 2 stationed in Taipei, Taiwan, with investigators at the National Tsing Hua University in Hsinchu, Taiwan, studied trace metals in muscle biopsies. This study determined muscle copper, zinc, and manganese concentrations using neutron-activation analysis to evaluate muscle biopsy as a diagnostic procedure, and analyzed tissue stores of copper in Wilson's disease patients. Fourteen patients with Wilson's disease, ten of their parents and siblings, and twelve healthy individuals participated. Of the fourteen patients with Wilson's disease, seven were females aged eleven to twenty-nine and seven were males aged fifteen to twenty-five. None of the participants was exposed to radiation. It was an in vitro study where tissue samples were removed from the participants and evaluated in laboratory tests. Although patients with Wilson's disease had a significant increase in mean muscle copper concentration when compared with that of controls, there was too much overlap for this to be a useful diagnostic test. Ten of the fourteen patients with Wilson's disease were estimated to have an increased amount of copper in their muscle tissues. This amount of copper was small when compared with the excess copper in the liver and central nervous system of patients with Wilson's disease and suggested that the muscle was only a secondary site for deposition of copper. Muscle copper concentration did not correlate with age, sex, or the length of time patients had received penicillamine therapy or with their clinical status.

Documents: Authors: M. L. Leu et al. Title: Muscle Copper, Zinc and Manganese Levels in Wilson's Disease: Studies with the Use of Neutron Activation Analysis. Journal: *Journal of Laboratory & Clinical Medicine,* vol. 76, no. 3. Document Type: Journal Article. Date: September 1970

Title: Muscle Copper, Zinc, and Manganese Levels in Wilson's Disease: Studies with the Use of Neutron Activation Analysis. Document Type: Search Printout. Date: 1994 est.

Naval Blood Research Laboratory, Boston, MA

Start Date	Number	Title
1964	**NHCHEL-001**	**Blood volume studies (Cr-51 and I-125)**

(For abstract and documentation, see Boston University School of Medicine, Boston, MA.)

Start Date	Number	Title
1964	**NHCHEL-002**	**Red blood cell survival studies (Cr-51 and I-125)**

(For abstract and documentation, see Boston University School of Medicine, Boston, MA.)

NAVY 1944–1974 (CONTINUED)

Naval Blood Research Laboratory, Boston, MA (continued)

Start Date Number Title

1964 NHCHEL-003 Platelet survival studies (Cr-51 and I-125)

(For abstract and documentation, see Boston University School of Medicine, Boston, MA.)

Start Date Number Title

1964 NHCHEL-004 Blood volume studies (Cr-51 and I-125)

(For abstract and documentation, see Boston University School of Medicine, Boston, MA.)

Naval Blood Research Laboratory, Chelsea, MA

Start Date Number Title

1964 NHCHEL-001 Blood volume studies (Cr-51 and I-125)

(For abstract and documentation, see Boston University School of Medicine, Boston, MA.)

Start Date Number Title

1964 NHCHEL-002 Red blood cell survival studies (Cr-51 and I-125)

(For abstract and documentation, see Boston University School of Medicine, Boston, MA.)

Start Date Number Title

1964 NHCHEL-003 Platelet survival studies (Cr-51 and I-125)

(For abstract and documentation, see Boston University School of Medicine, Boston, MA.)

Start Date Number Title

1964 NHCHEL-004 Blood volume studies (Cr-51 and I-125)

(For abstract and documentation, see Boston University School of Medicine, Boston, MA.)

Start Date Number Title

1973 NHCHEL-010 Correctional compression osteotomy of distal tibia

Abstract: In 1973, researchers from the Naval Hospital in Chelsea, MA, tested new methods for correcting improperly aligned, healed fractures of the tibia. The method was used on well-healed but

NAVY 1944–1974 (CONTINUED)

Naval Blood Research Laboratory, Chelsea, MA (continued)

malunited fractures with significant deformity and pain in the ankles or feet. Three patients participated, and corrective osteotomies were successful. Radiation exposures are not available at this time.

Documents: Author: Navy. Title: Abstract of Progress: Correctional Compression Osteotomy. Document Type: Abstract. Date: 1973 est.

Start Date	Number	Title
Unknown	**NHCHEL-012**	**Effects of position on results of gastric analysis**

Abstract: The inclusive dates for this study conducted at the Naval Hospital in Chelsea, MA, are presently undetermined. The purpose of the study was to evaluate gastric acidity in patients under rigid controls, by the method of Kay, in several body positions with the fluoroscopic placement of the collection in the same patient. Then the study was repeated without regard for placement and positions. Twenty patients participated. To date, the results of the study are undetermined.

Documents: Author: Navy. Title: Abstract of Progress: Effect of Position on Results of Gastric Analysis. Document Type: Abstract. Date: 1973 est.

Start Date	Number	Title
Unknown	**ONR-16**	**Analysis of erythrocyte survival curves obtained simultaneously by Cr-51 and automated differential agglutination technic (sic)**

(For abstract and documentation see Boston University School of Medicine, Boston, MA.)

Start Date	Number	Title
Unknown	**NHCHEL-023**	**Effects of hyperbaric exposure on human platelets**

Abstract: From a presently undetermined date until June 1974, researchers at the Naval Blood Research Laboratory in Chelsea, MA, studied the effects of hyperbaric exposure on human platelets. Six healthy, male divers ranging from twenty-two to forty-one years of age participated in the project. The purpose of the study was to investigate platelet survival and function and to determine whether the thrombocytopenia (an abnormal decrease in the number of platelets) occurred as a result of decreased platelet survival. Thrombocytopenia and changes in blood coagulation were reported in healthy individuals and animals subjected to hyperbaric exposure. Blood coagulation studies were also performed to determine whether exposure to compression-decompression produced intravascular coagulation. The data suggested a correlation between decreased platelet count and decreased platelet production.

Documents: Authors: C. R. Valeri et al. Title: Effects of Hyperbaric Exposure on Human Platelets. Journal: *Aerospace Medicine,* vol. 45, issue 6. Document Type: Journal Article. Date: June 1974

NAVY 1944–1974 (CONTINUED)

Naval Blood Research Laboratory, Chelsea, MA (continued)

Start Date	Number	Title
Unknown	**ONR-18**	**The relation between response to hypotonic stress and the Cr-51 recovery in vivo of preserved platelets**

Abstract: From a presently undetermined date until 1974, researchers at the Naval Blood Research Laboratory in Chelsea, MA, examined platelet response to hypotonic stress. Platelet response to hypotonic stress was used to estimate the chromium-51 (Cr-51) recovery in vivo of liquid- and freeze-preserved platelets. This simple in vitro test was examined to see if it would prove helpful in determining and controlling the quality of preserved platelets. Twenty-six healthy male volunteers ranging in age from twenty to thirty-five years participated in the study. The results indicated that the response to hypotonic stress was not related to the Cr-51 T-1/2 value of the preserved platelets but was related to the number of irreversibly damaged platelets removed within two hours after transfusion.

Documents: Authors: C. R. Valeri; H. Feingold; L. D. Marghionni. Title: The Relation Between Response to Hypotonic Stress and the 51Cr Recovery in Vivo of Preserved Platelets. Journal: *Transfusion,* vol. 14, no. 4. Document Type: Journal Article. Date: July-August 1974

Start Date	Number	Title
Unknown	**ONR-17**	**Lifespan of preserved red cells**

(For abstract and documentation, see Boston University Medical Center, Boston, MA.)

Naval Hospital, Bethesda, MD

Start Date	Number	Title
1950	**NMRI-07**	**Study of radiogallium as a diagnostic agent in bone tumors**

Abstract: From 1950 until 1951, researchers at the Naval Medical Research Institute and the Naval Hospital, both in Bethesda, MD, used gallium-72 (radiogallium, Ga-72) to identify bone lesions. Beyond development of methods for detecting localized Ga-72 in the body, this study also quantified Ga-72 localization in cancerous bone lesions in eighteen patients. Geiger counting techniques were applied to the skin surface to detect accumulations of radiogallium. Intravenous tracer doses of Ga-72 were selectively concentrated within osteogenic and osteolytic bone lesions in fifteen of eighteen cases of primary and secondary bone malignancies. Early metastases to bone were identified with tracer Ga-72 before changes could be detected by x-ray films. Concentration of tracer amounts of Ga-72 in malignancies involving bone was nearly twenty times that found in adjacent bone.

Documents: Authors: W. C. Mulry; H. C. Dudley. Title: Studies of Radiogallium as a Diagnostic Agent in Bone Tumors. Document Type: Report. Date: 1 March 1951

NAVY 1944–1974 (CONTINUED)

Naval Hospital, Bethesda, MD (continued)

Start Date	Number	Title
1952	**NNMC-144**	**Radium inhalation accident—radium excretion study**

(For abstract and documentation, see National Naval Medical Center, Bethesda, MD.)

Start Date	Number	Title
1954	**NNMC-138**	**Late clinical changes following the internal deposition of radioactive materials**

Abstract: In 1954, researchers from the Naval Hospital in Bethesda, MD, conducted a retrospective study on the effects of internally deposited radioactive materials. Information on fifty radium medical patients, twenty-eight luminous dial workers, and 4,955 Thorotrast patients was reviewed. The results indicated that clinical information served as a guide for diagnosis, management, and treatment of patients who may ingest or receive harmful amounts of radioactive materials. Radiobiologic data obtained by new and refined techniques gave a better understanding of the manner in which changes were produced by internally deposited radioelements. This information established more accurate maximum permissible levels of body burden for radioelements in use.

Documents: Author: Lt. William B. Looney, MC, USNR. Title: The Initial Medical and Industrial Use of Radioactive Materials (1915–1940). Journal: Unknown. Document Type: Journal Article. Date: November 1954

Authors: W. B. Looney, M.D. Title: Late Clinical Changes Following the Internal Deposition of Radioactive Materials. Journal: *Annals of Internal Medicine*, vol. 42, pp. 378-387. Document Type: Journal Article. Date: 1954

Start Date	Number	Title
1955	**NNMC-140**	**Late effects (25 to 40 years) of the early medical and industrial use of radioactive materials, part I**

(For abstract and documentation, see National Naval Medical Center, Bethesda, MD.)

Start Date	Number	Title
1956	**NNMC-141**	**Late effects (25 to 40 years) of the early medical and industrial use of radioactive materials, part II**

(For abstract and documentation, see National Naval Medical Center, Bethesda, MD.)

Start Date	Number	Title
1956	**NNMC-142**	**Late effects (25 to 40 years) of the early medical and industrial use of radioactive materials, part III**

(For abstract and documentation, see National Naval Medical Center, Bethesda, MD.)

NAVY 1944–1974 (CONTINUED)

Naval Hospital, Bethesda, MD (continued)

Start Date	Number	Title
1960	**NNMC-087**	**Use of total-body radiation in the treatment of far-advanced malignancies**

(For further information, see Chapter 2—"Total-Body and Partial-Body Irradiation Studies.")

Start Date	Number	Title
1964	**NNMC-134**	**Aortic insufficiency and pelvospondylitis in a seropositive female with rheumatoid nodules**

(For abstract and documentation, see National Naval Medical Center, Bethesda, MD.)

Start Date	Number	Title
Unknown	**NMRI-08**	**Urinary excretion of gallium**

Abstract: From a presently undetermined date until 1951, researchers from the Naval Medical Research Institute and the Naval Hospital, both in Bethesda, MD, examined the urinary excretion rate of gallium in cancer patients. The influence of activity and route of administration on the urinary excretion of gallium was assessed in animal studies, and a chemical method of measuring gallium in urine was established. Fifty cancer patients with cancerous bone lesions who had received gallium-72 intravenously participated in this study. Results of this study are unavailable at this time.

Documents: Authors: J. I. Munn; H. C. Dudley. Title: Urinary Excretion of Gallium. Document Type: Report. Date: 17 December 1951

Start Date	Number	Title
Unknown	**NMRI-11**	**Body fluids in hypertension and mild heart failure**

Abstract: From a presently undetermined date until 1955, researchers from the Naval Medical Research Institute and the Naval Hospital, both in Bethesda, MD, investigated a more reliable and practical method for measuring extracellular fluid (ECF) in an effort to aid in the diagnosis and management of cardiac patients. ECF, estimated with the aid of 250 microcuries of radiosulfate (S-35), and blood volume (BV), estimated with the aid of fifteen microcuries of radiochromium (Cr-51)-labeled erythrocytes, were determined simultaneously using a single blood sample. ECF and BV in twenty-four patients with congestive heart failure (no edema) and eleven patients with uncomplicated hypertension were compared to values in thirty normal subjects. In patients with heart failure, ECF averaged 22.5 percent as compared with 16.1 percent in normal subjects. In hypertensive patients, ECF was normal (16.2). BV did not differ significantly in the three groups.

Documents: Authors: M. Walker; B. J. Duffy; H. W. Griffith. Title: Body Fluids in Hypertension and Mild Heart Failure. Document Type: Report. Date: 13 September 1955

NAVY 1944–1974 (CONTINUED)

Naval Hospital, Bethesda, MD (continued)

Start Date	Number	Title
Unknown	**NMRI-15**	**Beta radiation lesion of the skin**

(For abstract and documentation, see National Naval Medical Center, Betehseda, MD.)

Start Date	Number	Title
Unknown	**NNMC-010**	**Blood volume studies in thoracic surgical patients using radioactive iodinated human serum albumin**

Abstract: From a presently undetermined date until 1955, researchers from Naval Hospitals in Portsmouth, VA, St. Albans, NY, and Bethesda, MD, conducted this study. The purpose of the investigation was to describe blood volume changes in a group of patients who underwent excisional pulmonary surgery. Sixty-five patients participated. Radioactive iodinated human serum albumin (RIHSA) was used in all of the studies. Three blood volume determinations were done in each case; studies were carried out one or two days preoperatively, immediately after operation, and seven days postoperatively. Approximately twenty microcuries of RIHSA were used for each determination. Results indicated that traditional gravimetric estimations of blood loss during intrathoracic surgery resulted in under-transfusion with deficits averaging about forty percent of the total blood loss. Researchers attributed red-cell deficit at the end of the first postoperative week to inadequate replacement of blood lost during surgery.

Documents: Authors: Clifford F. Storey, Capt., MC, USN; Charles G. Foster, Lt., MC, USNR; Thomas Mitchell, Lt., Junior Grade, MSC, USN. Title: Blood Volume Studies in Thoracic Surgical Patients Using Radioactive Iodinated Human Serum Albumin. Journal: *Journal of Thoracic Surgery*, vol. 30, issue 5. Document Type: Journal Article. Date: 1955

Start Date	Number	Title
Unknown	**NNMC-095**	**Radiolabeled chelates for visualization of kidney function and structure with emphasis on their use in renal insufficiency**

Abstract: From a presently undetermined date until 1974, researchers from the Naval Hospital, Bethesda, MD studied radiolabled chelates for the evaluation of renal (kidney) structure and function. Twelve patients participated in the study. Stable chelates of indium-111, indium-113m, chromium-51, ytterbium-169, and technetium-99m proved to be useful radiopharmaceuticals for evaluating renal structure and function. These radioactive chelates also had a high degree of success in visualizing the kidneys in patients with severe renal insufficiency. Other applications of renal imaging studies with radio-chelates included the detection of unilateral renal disease and obstructive uropathy, the differentiation of cysts and tumors, and the evaluation of function after renal transplantation.

Documents: Authors: Richard C. Reba; Kattadiyil P. Poulose; Peter T. Kirchner. Title: Radiolabeled chelates for visualization of kidney function and structure with emphasis on their use in renal insufficiency. Journal: *Seminars in Nuclear Medicine*, vol. 4, issue 2. Document Type: Journal Article. Document Date: April 1974

NAVY 1944–1974 (CONTINUED)

Naval Hospital, Bethesda, MD (continued)

Start Date | Number | Title

Unknown | **NNMC-119** | **Clinical diagnostic studies of gastrointestinal tract utilizing radioisotopes**

Abstract: From a presently undetermined date until 1958, researchers at the Naval Hospital in Bethesda, MD, conducted clinical diagnostic studies of the gastrointestinal tract using radioisotopes. The purpose of the study was to describe four procedures using radioisotopes, which aid in evaluating gastrointestinal activity. Five case studies were also presented. The four procedures used in this study were the Schilling Test (0.5 microcurie of cobalt-60), the trioleinoleic acid tests (25.0 microcuries of iodine-131), iron absorption (25.0 microcuries of iron-59), and labeled red cell excretion (35.0 microcuries of chromium-51). The first three techniques quantified absorption from the gastrointestinal tract and strengthened the diagnosis of malabsorption syndrome, differentiating it from defects of enzymatic digestion. Labeled cell excretion detected gastrointestinal hemorrhage permitted the quantitation of chronic gastrointestinal blood loss.

Documents: Authors: Richard P. Spencer, Lt., MC, USNR et al. Title: Clinical Diagnostic Studies of the Gastrointestinal Tract Utilizing Radioisotopes. Journal: *Southern Medical Journal.* Document Type: Journal Article. Date: November 1958

Start Date | Number | Title

Unknown | **NNMC-139** | **Autoradiographic and histopathological studies of thorium dioxide patients**

(For abstract and documentation, see National Naval Medical Center, Bethesda, MD.)

Start Date | Number | Title

Unknown | **NNMC-143** | **Investigation of late clinical findings following Thorotrast (thorium dioxide) administration**

(For abstract and documentation, see National Naval Medical Center, Bethesda, MD.)

Naval Hospital, Boston, MA

Start Date | Number | Title

Unknown | **NHCHEL-012** | **Effects of position on results of gastric analysis**

(For abstract and documentation, see Naval Blood Research Laboratory, Chelsea, MA.)

Start Date | Number | Title

Unknown | **NHCHEL-020** | **Gallium-67 scanning for staging of carcinoma of breast**

Abstract: The inclusive dates for this study conducted from the Naval Hospital in Boston are presently undetermined. Researchers studied the concentration of exogenously administered gallium-67 in

NAVY 1944–1974 (CONTINUED)

Naval Hospital, Boston, MA (continued)

malignant tissue compared to normal tissue. To date, no information is available on the number of study participants. Whole-body scans were performed with a gamma camera seventy-two hours after isotope administration to patients with suspected or proven breast cancer. The results of the pathologic examination of the surgical specimens were then correlated with the results of the scan. Areas of increased isotopic concentration outside the breast were investigated in hopes of identifying sites of metastatic disease. Selected tumors other than those of the breast were also studied. Although definitive results of the study are not available at this time, careful, long-term follow-up was planned to fully evaluate the true clinical usefulness of the gallium-67 scan.

Documents: Authors: E. M. Braun; T. J. Lapine; D. G. Taylor. Title: Neoplastic Disease. Gallium-67 Scans in the Staging of Carcinoma of the Breast. Journal: *U. S. Navy Medicine*, vol. 59. Document Type: Abstract. Date: June 1972

Start Date	Number	Title
Unknown	**NHCHEL-021**	**Gallium scans in the staging of malignant diseases**

Abstract: The inclusive dates for this study, conducted from the Naval Hospital in Boston, MA, and the Naval Hospital in Chelsea, MA, are presently undetermined. Researchers evaluated gallium-67 imaging of malignant tissue. By 1972, fifty-six patients with breast cancer, lung cancer, or lymphoma had participated. Whole-body scans were done with a gamma camera seventy-two hours after isotope administration. Scan results were correlated with other clinical measurements to evaluate the usefulness of the scan in staging malignant disease. Scans were found to be useful as a staging procedure.

Documents: Authors: E. M. Braun; T. J. Lapine. Title: Neoplastic Disease. Gallium-67 Scans in the Staging of Malignant Diseases. Journal: *U. S. Navy Medicine*. Document Type: Abstract. Date: 1972

Start Date	Number	Title
Unknown	**NNMC-031**	**Investigation of the transfer of iodine and thyroid hormone across the placenta in early human gestation**

Abstract: The inclusive dates for this study are presently undetermined. Researchers from the Naval Hospital in Boston, MA, proposed to investigate the transfer of iodine and thyroid hormones across the placenta in early gestation. Researchers projected the inclusion of ten to fifteen pregnant women whose gestations were between twelve and twenty weeks and who were planning to undergo therapeutic abortions. No abortions were to be delayed to bring the patient into the range of study. Diagnostic amounts of iodine-131 (I-131) or thyroid hormone labeled with I-131 were to be administered at varying intervals before surgery. Immediately before surgery, maternal blood was to be obtained and studied. In addition, through serial samples, the rate of disppearance of I-131 from the maternal blood was to be measured. Following the procedure, fetal products were also to be obtained and analyzed. Results of this study are not available at this time.

Documents: Author: S. Barchet. Title: The Investigation of the Transfer of Iodine and Thyroid Hormone Across the Placenta in Early Human Gestation. Document Type: Proposal. Date: 1973 est.

NAVY 1944–1974 (CONTINUED)

Naval Hospital, Charleston, SC

Start Date	Number	Title
Unknown	**NHCHA-002**	**Double blind prospective study of aerosolized steroids in croup**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Naval Hospital, Chelsea, MA

Start Date	Number	Title
1971	**NHCHEL-017**	**Evaluation of hypophosphatemia and blood volume changes induced by parenteral hyperalimentation**

Abstract: From 1971 to 1973, researchers from the Naval Hospital in Chelsea, MA, determined the effects of intravenous administration of total nutrient requirements via a central venous catheter on blood volume and blood phosphate levels. Improvements in the parenteral solution permitted the replacement of organic phosphates and reduced the deleterious effects of phosphate depletion. Patients receiving alimentation for up to one year did not have significant changes in blood volume or inorganic phosphates. Neither the number of participants nor radiation environments were specified in available documents.

Documents: Author: Navy. Title: Abstract of Progress: The Evaluation of Hypophosphatemia and Blood Volume Changes Induced by Parenteral Hyperalimentation. Document Type: Abstract. Date: 1972 est.

Start Date	Number	Title
1972	**NHCHEL-005**	**Study of carbon monoxide production during anesthesia as method of determining red blood cell survival**

Abstract: From 1972 to 1973, researchers from the Naval Hospital in Chelsea, MA, studied methods of evaluating the red blood cell mass and turnover in surgical patients. Carbon monoxide is a product of hemoglobin breakdown. Calculation of hemoglobin mass and turnover was measured by placing patients on a closed breathing circuit and measuring respiratory excretion of carbon monoxide. Twenty-one patients participated. Neither the radiation environments nor results of the study were specified in available documents.

Documents: Title: Abstract of Progress: A Study of Carbon Monoxide Production During Anesthesia as a Method of Determining Red Blood Cell Hemolysis and Red Blood Cell Survival. Document Type: Abstract. Date: 1973 est.

NAVY 1944–1974 (CONTINUED)

Naval Hospital, Chelsea, MA (continued)

Start Date	Number	Title
1972	**NHCHEL-008**	**Clinical effects of beta-blockade on thyrotoxicosis**

Abstract: From 1972 to 1973, researchers from the Naval Hospital in Chelsea, MA, examined Inderal, a beta-adrenergic receptor antagonist, to control symptoms of thyrotoxicosis. Ten patients participated. Improvement of symptoms was noted in varying degrees after administration of Inderal. The radiation environment was not specified in available documents.

Documents: Title: Abstract of Progress: Clinical Effects of Beta-Blockade on Thyrotoxicosis. Document Type: Abstract. Date: 1973 est.

Start Date	Number	Title
1972	**NHCHEL-011**	**Effects of estrogen therapy on parameters of thyroid function in post-menopausal patient**

Abstract: From 1972 to 1973, researchers at the Naval Hospital in Chelsea, MA, examined the effects of post-menopausal estrogen replacement therapy on serum levels of thyroxine-binding globulin and thyroid function. The number of subjects is unknown. Neither the results of this study nor the radiation environments were specified in available documents.

Documents: Author: Navy. Title: Abstract of Progress: The Effect of Estrogen Therapy on Parameters of Thyroid Function In Post-Menopausal Women. Document Type: Abstract. Date: 1973 est.

Start Date	Number	Title
1972	**NHCHEL-013**	**Clinical cancer research in association with Eastern Cooperative Oncology Group (ECOG)**

Abstract: From 1972 until a presently undetermined date, researchers from the Naval Hospital in Chelsea, MA, participated in a large-scale clinical cancer research effort. Eighteen patients encompassing a wide range of malignant diseases were treated with drug regimens designed by the Eastern Cooperative Oncology Group. Pooled with information from other institutions, the therapeutic regimen was evaluated statistically. Neither radiation environments nor results of this study were specified in available documents.

Documents: Title: Abstract of Progress: Clinical Cancer Research. Document Type: Abstract. Date: 1973 est.

Start Date	Number	Title
1972	**NHCHEL-014**	**Detection of occult, venous thrombosis by "impedence meter" and I-125 fibrinogen**

Abstract: From 1972 to 1973, researchers from the Naval Hospital in Chelsea, MA, tested the Codman Impedance Phlebograph for detecting occult venous thromboses. Two hundred one patients were screened using the phlebograph, followed by standard venographic studies. Strong correlations were found, and anticoagulant treatment decisions were based on phlebograph

NAVY 1944–1974 (CONTINUED)

Naval Hospital, Chelsea, MA (continued)

tracings alone. Iodine-125 labeled fibrinogen was used as a tracer in these studies. Radiation exposures are not available at this time.

Documents: Title: Abstract of Progress: Detection of Occult Venous Thrombosis by an Impedance Meter and I-125 Fibrinogen. Document Type: Abstract. Date: 1972 est.

Start Date	Number	Title
1972	**NHCHEL-015**	**Treatment of acute and chronic edema secondary to lymphatic or venous insufficiency**

Abstract: From 1972 to 1973, researchers from the Naval Hospital in Chelsea, MA, tested the Jobst Intermittent Compression Unit in the treatment of acute and chronic edema. Fifty patients participated, and use of the apparatus noticeably diminished edema with good symptomatic relief. Radiation environments were not specified in available documents.

Documents: Title: Abstract of Progress: Treatment of Acute and Chronic Edema Secondary to Lymphatic or Venous Insufficiency. Document Type: Abstract. Date: 1972 est.

Start Date	Number	Title
1972	**NHCHEL-016**	**Nitroblue tetrazolium test, its use in (a) diagnosis of postoperative fever, (b) appendicitis**

Abstract: From 1972 until a presently undetermined date, researchers at the Naval Hospital in Chelsea, MA, evaluated the nitroblue tetrazolium test (NBT) in the diagnosis of postoperative fever. Eighteen patients participated. NBT was found to be a sensitive index of bacterial infection, and good correlations were found between significant infection, toxic granulation, and positive NBT response. Radiation environments were not specified in available documents.

Documents: Author: Navy. Title: Abstract of Progress: Nitroblue Tetrazolium Test. Document Type: Abstract. Date: 1972 est.

Start Date	Number	Title
1973	**NHCHEL-009**	**Evaluation of vectorcardiogram on early detection of increased right heart work in asthma in children**

Abstract: From 1973 until a presently undetermined date, researchers from the Naval Hospital in Chelsea, MA, studied the effects of asthma on the heart. Screening methods for detecting increased load on the right side of the heart, which sends blood to the lungs for oxygenation, were evaluated. Vectorcardiograms (VCG) were used to record the electrical activity of the heart. Eleven patients participated in the study. After a complete physical examination and medical history evaluation, skin tests for seventy-two common allergens were given. Pulmonary function studies, sweat electrolyte determinations, and serological tests were completed before the VCGs were administered. Clinical findings were correlated with VCG studies to decide whether an increased load on the right side of the heart existed. All VCGs were normal. Radiation environments were not specified in available documents..

Documents: Author: Navy. Title: Abstract of Progress: Evaluation of the Vectorcardiogram in Early Detection of Increased Right Heart Work in Asthma in Children. Document Type: Abstract. Date: 1973 est.

NAVY 1944–1974 (CONTINUED)

Naval Hospital, Chelsea, MA (continued)

Start Date	Number	Title
Unknown	**NHCHEL-007**	**Treatment of ankle fractures by anatomic reduction and internal fixation with early motion**

Abstract: The inclusive dates for this study conducted by researchers from the Naval Hospital in Chelsea, MA, are presently undetermined. This study assessed rigid internal fixation and early motion in the treatment of fresh ankle fractures of various kinds. This procedure was expected to improve post-fracture range of motion, decrease post-traumatic arthritis, and provide an early return to normal capabilities. The number of study participants is unknown. Neither radiation environments nor results of the study were specified in available documents.

Documents: Title: Abstract of Progress: Treatment of Ankle Fractures [includes proposal]. Document Type: Abstract. Date: 1973 est.

Start Date	Number	Title
Unknown	**NHCHEL-012**	**Effects of position on results of gastric analysis**

(For abstract and documentation, see Naval Blood Research Laboratory, Chelsea, MA.)

Start Date	Number	Title
Unknown	**NHCHEL-018**	**Evaluation of cast brace in treatment of femoral shaft fractures**

Abstract: The inclusive dates for this study are presently undetermined. Researchers from the Naval Hospital in Chelsea, MA, proposed to improve casting methods for fractures of the femur. The researchers hoped that the cast-brace would permit walking throughout the healing period, decrease healing duration, eliminate infection and other health problems, and allow the patient to resume normal activities four to six weeks after injury. At least twelve patients participated. Radiation environments were not specified in available documents.

Documents: Author: Navy. Title: Clinical Investigation Study Proposal: Evaluation of the Cast Brace in the Treatment of Femoral Shaft Fractures. Document Type: Proposal. Date: 1972 est.

Start Date	Number	Title
Unknown	**NHCHEL-019**	**Heparin anticoagulation by continuous intravenous infusion**

Abstract: The inclusive dates for this study conducted are presently undetermined. Researchers from the Naval Hospital in Chelsea, MA, proposed to determine the reliability of activated partial thromboplastin time (APTT) in monitoring anticoagulant effects. The researchers hoped when APTT was constantly maintained within defined limits through continuous intravenous (IV) infusion of anticoagulants, the incidence of complications would decrease. Ten patients were to be treated by subcutaneous and intermittent administration of heparin followed by serial APTTs. All patients without evidence of pulmonary embolisms were to be treated with an initial IV dose of heparin followed by a twent-four-hour infusion. Patients with pulmonary embolisms were to be

NAVY 1944–1974 (CONTINUED)

Naval Hospital, Chelsea, MA (continued)

treated with an initial dose of heparin only. The results of this study are not available at this time. Radiation environments were not specified in available documents.

Documents: Author: Navy. Title: Heparin Anticoagulation by Continuous Intravenous Infusion. Document Type: Proposal. Date: 1974 est.

Start Date	Number	Title
Unknown	**NHCHEL-020**	**Gallium-67 scanning for staging of carcinoma of breast**

(For abstract and documentation, see Naval Hospital, Boston, MA.)

Start Date	Number	Title
Unknown	**NHCHEL-021**	**Gallium scans in the staging of malignant diseases**

(For abstract and documentation, see Naval Hospital, Boston, MA.)

Start Date	Number	Title
Unknown	**ONR-17**	**Lifespan of preserved red cells**

(For abstract and documentation, see Boston University Medical Center, Boston, MA.)

Naval Hospital, Great Lakes, IL

Start Date	Number	Title
1970	**NNMC-022**	**Evaluation of cervical spine injuries using cineroentgenography**

Abstract: From 1970 until 1974, researchers from the Naval Hospital in Great Lakes, IL, investigated routine motion studies for evaluation of painful or injured necks. Thirty-four patients participated. Twenty-seven were examined by cineroentgenography (x-ray series made into a motion picture), the rest by audiovisual fluoroscopy (videotaping fluoroscope images as they appeared on the screen). Mean radiation exposure rates using fluoroscopy were reduced by a factor of eleven, and the resulting images were of a greater quality. Additionally, patients were more comfortable and exams took less time to conduct.

Documents: Authors: C. W. Ochs; W. D. Carver; J. B. Oldershaw; D. W. Cloos. Title: Evaluation of Cervical Spine Injuries Using Cineroentgenography. Journal: *U. S. Navy Medicine*. Document Type: Journal Article. Date: 1972

Authors: C. W. Ochs; W. D. Carver; J. B. Oldershaw; D. W. Cloos. Title: Evaluation of Cervical Spine Injuries Using Cineroentgenography. Document Type: Abstract. Date: 1972

Authors: Capt. Charles W. Ochs, MC, USN; Comdr. John S. Romine, MC, USNR; Comdr. John B. Oldershaw, MC, USN; Lt. David W. Cloos, MC, USNR. Title: Radiographic Examination of the Cervical Spine in Motion. Journal: *U. S. Navy Medicine*, vol. 64. Document Type: Journal Article. Date: July 1974

NAVY 1944–1974 (CONTINUED)

Naval Hospital, Great Lakes, IL (continued)

Start Date	Number	Title
1972	**NHGL-001**	**Correlation of exercise tolerance testing and coronary angiography**

Abstract: From 1972 until a presently undetermined date, researchers from the Naval Hospital in Great Lakes, IL, investigated correlations between exercise (stress) testing and coronary angiography. To date, no information is available on the number of subjects. Anatomic abnormalities were correlated with EKG changes. Patients undergoing coronary arteriography were exposed to submaximal exercise tolerance testing using a bicycle ergometer to provide graded stress exposure. Results of this study are not available at this time.

Documents: Author: R. Landesman. Title: Correlation of Exercise Tolerance Testing and Coronary Angiography. Document Type: Abstract. Date: 1972

Start Date	Number	Title
1972	**NHGL-002**	**Diagnostic accuracy of fiber optic duodenoscopy in upper gastrointestinal diseases**

Abstract: In 1972, researchers from the Naval Hospital in Great Lakes, IL, retrospectively reviewed the diagnostic accuracy of fiber optic duodenoscopy. Two hundred five patient histories were reviewed, and a total of two hundred twenty-five upper gastrointestinal endoscopy procedures were analyzed. The clinical usefulness of the procedure was determined by comparing the predominant endoscopic findings with radiological findings and subsequent clinical care. Clinical symptoms and response to therapy correlated well with endoscopic findings.

Documents: Author: J. O. Stauffer. Title: Evaluation of the Diagnostic Accuracy of Fiber Optic Duodenoscopy in Upper Gastrointestinal Diseases. Document Type: Report; Abstract. Date: 1972

Start Date	Number	Title
1972	**NHGL-003**	**Bedside study of CVP [central venous pressure] and wedge pressure in acute myocardial infarction**

Abstract: From 1972 until a presently undetermined date, researchers from the Naval Hospital in Great Lakes, IL, investigated left and right heart filling pressure disparity in acute myocardial infarction. Additionally, wedge pressure (the blood pressure in a vein reflecting filling pressure to the ventricle) was correlated with the magnitude of the p-terminal force in patients with congestive failure and pulmonary edema. Neither results of this study nor radiation environments were specified in available documents.

Documents: Author: H. J. Palay. Title: Bedside Study of CVP and Wedge Pressure in Acute Myocardial Infarction. Document Type: Abstract. Date: 1972

NAVY 1944–1974 (CONTINUED)

Naval Hospital, Great Lakes, IL (continued)

Start Date	Number	Title
1972	**NHGL-004**	**Evaluation of time-saving potential of persistence scope**

Abstract: From 1972 to 1973, researchers from the Naval Hospital in Great Lakes, IL, evaluated the use of a persistence scope, or storage oscilloscope, in positioning patients for nuclear medicine scans. To date, no information is available on the number of participants. Because the equipment stores individual signals and displays them as an integrated image, it simplified positioning of the patients. Researchers concluded that, while this equipment was not the most significant factor in reducing the patient positioning time, the use of the scope during the study built confidence in the technicians conducting the scans. The persistence scope was recommended for all hospitals with a Pho-Gamma camera.

Documents: Title: #NHGL-04: Evaluation of Time-Saving Potential of Persistence Scope. Document Type: Abstract. Date: 1972

Author: C. P. Meyers. Title: Evaluation of Time-Saving Potential of Persistence Scope. Journal: *U. S. Navy Medicine*, vol. 61, issue 6. Date: June 1973.

Start Date	Number	Title
1972	**NHGL-005**	**To evaluate percutaneous cervical cordotomy in management of pain**

Abstract: From 1972 until a presently undetermined date, researchers from the Naval Hospital in Great Lakes, IL, evaluated interruption of the lateral spinothalamic tract at the level of the cervical spinal cord for relief of intractable pain using electrodes placed through the skin. Percutaneous electrode placement was guided radiographically. To date, no information is available on the number of subjects. Results of this study are not available at this time.

Documents: Author: J. B. Oldershow. Title: Percutaneous Cervical Cordotomy. Document Type: Abstract. Date: 1972

Start Date	Number	Title
1972	**NHGL-070**	**Dynamic scintiphotography on the evaluation of renal disease**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1972	**NHGL-071**	**Diagnosis of early arthritis by joint scintiphotography**

Abstract: In 1972, researchers from the Naval Hospital in Great Lakes, IL, evaluated technetium-99m (Tc-99m) pertechnetate scintiphotography for early diagnosis of arthritis. Twenty-one patients with

NAVY 1944–1974 (CONTINUED)

Naval Hospital, Great Lakes, IL (continued)

arthralgia participated in this study. Ten patients undergoing brain imaging were studied as examples of normal scans. Scintiphotography easily distinguished joints that were obviously clinically inflamed, and radioactivity was concentrated to a greater extent than with existing techniques. However, patients with arthralgia had normal scans, and the technique was not helpful as a diagnostic aid.

Documents: Authors: G. J. Weir; R. E. Easterday. Title: Diagnosis of Early Arthritis by Joint Scintiphotography. Journal: *U. S. Navy Medicine*, vol. 61, issue 6. Document Type: Journal Article. Date: June 1973

Start Date	Number	Title
1972	**NHGL-072**	**Radioisotopic determination of glomerular filtration rate (GFR) and effective renal plasma flow (ERPF)**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1972	**NNMC-023**	**Evaluation of available kits for radioimmunoassay**

Abstract: From 1972 until a presently undetermined date, researchers from the Naval Hospital, Great Lakes, IL evaluated available kits for radioimmunoassay. Forty-six patients participated in this in vitro study. As kits became available, they were checked for accuracy, reproducibility, ease of performance and clinical usefulness. Accuracy and reproducibility of a direct measurement of free thyroxine was previously reported in detail. This test was routinely used in place of the combined resin uptake and total thyroxine measurements. It was not, however, proven as accurate as the total thyroxine measurement, nor as useful in difficult cases. Human growth hormone radioimmunassay was offered routinely. It proved necessary to make runs at least monthly to maintain technical familiarity. Angiotension I was assayed to assess renin activity. This test proved accurate and reproducible and was offered as a routine clinical test. Assay of immunoglobulin E was briefly evaluated. The test appeared satisfactory but clinical demand did not justify further exploration.

Documents: Authors: G. J. Weir, Jr.. Title: Evaluation of commercially available kits for radioimmunoassay. Document Type: Abstract. Document Date: 1972 est.

Title: Regarding radioimmunoassay and other in vitro isotopic techniques. Document Type: Protocol. Document Date: 1972 est.

Start Date	Number	Title
1972	**NNMC-025**	**Evaluation of role of thyrotrophic hormone (TSH) in simple and multinodular goiter and thyroid carcinoma**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

NAVY 1944–1974 (CONTINUED)

Naval Hospital, Great Lakes, IL (continued)

Start Date	Number	Title
1972	**NNMC-026**	**Diagnosis of early arthritis by joint scintiphotography**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1972	**NNMC-027**	**Diagnosis of urinary tract obstruction by scintiphotography**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1972	**NNMC-028**	**Dynamic scintiphotography in the evaluation of renal disease**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**NNMC-033**	**Effect of cholecystectomy on the constituents and size of the bile acid pool**

Abstract: In 1974, researchers at the Naval Hospital in Great Lakes, IL proposed to examine the composition and size of the total bile acid pool after cholecystectomy and what relationship the altered physiology may have to patients who later form de novo common duct stones. Researchers projected that fifteen individuals would participate in the study. Ten of the participants were to be patients with diagnosed cholelithiasis and/or choledocholithiasis and five were to be age-matched controls. The controls were to be volunteers undergoing laporotomy for diseases not related to the gall bladder and whose gall bladder might be examined at the time of operation to confirm its normalcy. In all participants, studies to be obtained included an oral cholecystogram. Calculation of the total bile acid pool entailed measurement of the total bile salt pool pre-operatively (or at the time of surgery for patients having their gall bladder removed surgically) and ten days post-operatively. Bile samples were to be obtained at time zero, one and three days. The total bile salt acid pool was determined using fifteen to twenty-five microcuries of orally administered carbon-14 labeled cholic acid plus twenty-five milligrams of carrier cholic acid as sodium salt. Results of this study are not available at this time.

Documents: Author: John R. Wesley, Lt. Comdr., MC, USNR. Title: Clinical Investigation Study Proposal: The Effect of Cholecystectomy on the Constituents and Size of the Bile Acid Pool. Document Type: Proposal. Date: 1974

NAVY 1944–1974 (CONTINUED)

Naval Hospital, Great Lakes, IL (continued)

Start Date	Number	Title
Unknown	**NHGL-073**	**Strontium-85 photoscanning in Paget's disease**

Abstract: From a presently undetermined date until 1964, researchers from the Naval Hospital in Great Lakes, IL, reassessed the use of strontium-85 (Sr-85) in imaging bone lesions by photoscanning. Of the five patients who participated, three had Paget's disease and two had eosinophilic granuloma of bone and Hodgkin's disease. Results of this study are unavailable at this time.

Documents: Authors: Edward W. Klein, Lt. Comdr., MC, USN; Ronald R. Lund, Lt. Comdr., MC, USN. Title: Strontium-85 Photoscanning in Paget's Disease. Journal: *American Journal of Roentgenolology*, vol. 92, issue 1. Document Type: Journal Article. Date: July 1964

Naval Hospital, Jacksonville, FL

Start Date	Number	Title
1971	**NHJAX-001**	**Prospective cooperative study into the etiology of Reye's syndrome, and effectiveness of current modes of therapy**

Abstract: In 1971, researchers from the Naval Hospital in Jacksonville, FL, proposed to determine the incidence of Reye's syndrome and investigate causative agents, susceptibility, and the effectiveness of therapy available at the time. This was a prospective cooperative study, and data was to be collected by the Pediatrics Service of the Naval Hospital in Bethesda, MD, from all military graduate training hospitals. To date, no information is available on the number of participants. X-ray renograms and nuclear medicine scans were to be used to evaluate the disease. Radiation exposures and results of this study are not available at this time.

Documents: Author: Mark N. Goldschmidt, Lt. Comdr., MC, USN. Title: Clinical Investigation Study Proposal; (A) Project Title: A Prospective Cooperative Study into the Etiology of Reye's Syndrome, and the Effectiveness of Current Modes of Therapy. Document Type: Proposal. Date: 16 August 1971

Naval Hospital, Newport, RI

Start Date	Number	Title
Unknown	**NHN-01**	**Metabolic diseases and urinary calculi**

Abstract: From a presently undetermined date until 1956, researchers from the Naval Hospital in Newport, RI, analyzed abdominal x-rays taken to diagnose groin pain in two patients. Case reports were presented from two patients where kidney stones were diagnosed.

Documents: Author: Richard P. Spencer. Title: Metabolic Diseases and Urinary Calculi. Journal: *U. S. Armed Forces Medical Journal*, vol. VII, no. 8. Document Type: Journal Article. Date: August 1956

NAVY 1944–1974 (CONTINUED)

Naval Hospital, Oakland, CA

Start Date	Number	Title
1947	**NHOAK-044**	**The pathological physiology of the liver**

Abstract: From 1947 until a presently undetermined date, researchers from the University of San Francisco, the University of California, Berkeley, and the Naval Hospital in Oakland, CA, studied the pathological physiology of the liver. Non-toxic tracer administrations of twenty-five to fifty microcuries of sulphur-35 labled methionine were used to evaluate protein metabolism in general, and the anabolism and catabolism of protien in particular, and in various disease states including chronic liver disease, Cushing's syndrome, and idiopathic hypoproteinemia. To date, no information is available on the number of participants or research results. However, in a supporting study entitled "Plasma L-Methionine Levels Following Intravenous Administration in Humans," eleven normal, male individuals served as controls.

Documents: Author: Harold A. Harper; Laurance W. Kinsell; Harry C. Barton. Title: Plasma L-Methionine Levels Following Intravenous Administration in Humans. Journal: *Science*. Document Type: Journal Article. Date: 3 October 1947

Authors: L. W. Kinsell. Title: The Pathological Physiology of the Liver. Document Type: Proposal. Date: 2 August 1948

From: Laurance W. Kinsell, M.D. To: Chief of Naval Research, Attention: Biochemistry Branch, Medical Sciences Division–Code 442. Subject: Enclosed (in Quintuplicate) is a Bibliography of All Publications Issued Under the ONR Contract Concerned, from Date on Inception of this Task to 01 January 1950. Document Type: Letter/Bibliography. Date: 30 January 1959

Start Date	Number	Title
1951	**NHOAK-045**	**Clinical studies with radioactive iron**

Abstract: In 1951, researchers from the Naval Hospital in Oakland, CA, and the Naval Radiological Defense Laboratory in Hunters Point, CA, proposed clinical studies with radioactive iron. The purpose of the investigation was to study the use of radioactive iron, Fe-59, to examine erythropoiesis (the formation of red blood cells) and the effect of irradiation upon this process in humans. The proposal called for patients receiving x-ray therapy or total body irradiation for a particular disease; however, to date, no information is available on the number of participants or research results. Tracer doses of Fe-59 incubated with plasma were to be injected intravenously. The researchers hoped that the measurement of radioactive iron uptake would correlate well enough with radiation injury to allow the development of a practical test to determine the extent of radiation injury. In addition, it was planned to use the techniques to study erythropoiesis in certain disease states, such as aplastic anemia, and as a method of evaluating therapeutic agents in these disorders.

Documents: From: J. N. C. Gordon. To: Director, US Naval Radiological Defense Laboratory. Subject: Approval of Joint Research Projects with US Navy Research and Development Laboratory, Hunters Point, California [includes research proposals and related correspondence]. Document Type: Memorandum. Date: 12 October 1951

NAVY 1944–1974 (CONTINUED)

Naval Hospital, Oakland, CA (continued)

Start Date	Number	Title
1951	**NHOAK-046**	**The effect of radiation on antibody production in the human**

Abstract: In 1951, researchers from the Naval Hospital in Oakland, CA, and the Naval Radiological Defense Laboratory in Hunters Point, CA, proposed to study the effects of radiation on antibody production in humans. It had been established in animals that exposure to total-body irradiation increased susceptibility to infection and was frequently followed by bacteremia. It was believed that decreased antibody production may be a factor responsible for this increased susceptibility to infection on irradiated animals. Therefore, researchers for this study proposed to study the effect of irradiation on the ability of humans to produce antibodies to various antigens. The proposal called for patients receiving x-ray therapy or total body irradiation for a disease where such therapy was indicated, patients receiving large doses of abdominal irradiation, or patients being treated with nitrogen mustard or aminopterin. The technique of this study involved giving patients one or more of the following four antigens: typhoid, Heidelberger's pneumococcus polysaccharide, diphtheria toxoid, or tetanus toxoid. The serum antibody titers before and after irradiation were to be followed in the patients. A booster dose of the antigen was to be given following irradiation and the serum antibody titers followed again. Using various antigen, irradiation-time combinations, an attempt would be made to establish a relationship between length of exposure to irradiation and degree of antibody response. In addition, serum from patients receiving x-ray or similar therapy would be used to study the effects on already existing immunities in these patients. This would be done with serum protection tests on mice. Frequent blood cultures would be taken on the participants under observation. To date, no information is available on the number of participants or research results.

Documents: From: J. N. C. Gordon. To: Director, US Naval Radiological Defense Laboratory. Subject: Approval of Joint Research Projects with US Navy Research and Development Laboratory, Hunters Point, California [includes research proposals and related correspondence]. Document Type: Memorandum. Date: 12 October 1951

Start Date	Number	Title
1951	**NHOAK-047**	**A study of the use and effects of I-131 in patients with thyroid carcinoma**

Abstract: In 1951, researchers from the Naval Hospital in Oakland, CA, and the Naval Radiological Defense Laboratory in Hunters Point, CA, proposed to study the use and effects of iodine-131 (I-131) on patients with thyroid cancer. The purpose of the investigation was to provide a detailed study of I-131 excretion as well as I-131 distribution studies using localized counting in vivo and counting of serum inorganic and protein-bound iodine. The proposal also called for periodic studies of plasma phospholopids, of the ability of patients to produce antibodies, of red blood cell and white blood cell counts, in addition to liver and kidney function tests. An attempt was to be made to calculate radiation dosage delivered to various areas of the body and to correlate these dosages with functional changes. It was hoped that these studies would throw some light on the amount of radiation necessary to produce certain physiological changes in humans. To date, no information is available on the number of participants or research results.

Documents: From: J. N. C. Gordon. To: Director, US Naval Radiological Defense Laboratory. Subject: Approval of Joint Research Projects with US Navy Research and Development Laboratory, Hunters Point, California [includes research proposals and related correspondence]. Document Type: Memorandum. Date: 12 October 1951

NAVY 1944–1974 (CONTINUED)

Naval Hospital, Oakland, CA (continued)

Start Date	Number	Title
1951	**NHOAK-048**	**The effect of radiation on plasma phospholipids in humans**

Abstract: In 1951, researchers from the Naval Hospital in Oakland, CA, and the Naval Radiological Defense Laboratory in Hunters Point, CA, proposed to study the effect of radiation on plasma phospholipids in humans. It had been demonstrated in animals that total body irradiation produced marked changes of plasma phospholipids levels. The mechanism responsible for these changes was not known, but it was believed that the liver might be the primary organ involved. The researchers for this study therefore proposed to extend these observations to humans. The participants were to be patients receiving x-rays for therapeutic purposes. This was to include patients receiving total body irradiation or abdominal irradiation as therapeutic treatment. The researchers planned to determine fasting plasma phospholipid levels for several days prior to irradiation and for seven consecutive days after irradiation. It was hoped that the plasma phospholipid levels on patients who received x-ray therapy would show some correlation with the dosage of x-ray they had received. To date, no information is available on the number of participants or research results.

Documents: From: J. N. C. Gordon. To: Director, US Naval Radiological Defense Laboratory. Subject: Approval of Joint Research Projects with US Navy Research and Development Laboratory, Hunters Point, California [includes research proposals and related correspondence]. Document Type: Memorandum. Date: 12 October 1951

Start Date	Number	Title
Unknown	**ONR-28**	**An evaluation of rapid weight reduction in obesity; body composition during therapy in diabetes mellitus**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
Unknown	**NHOAK-003**	**Splenic artifact caused by barium in colon**

Abstract: The inclusive dates for this study conducted at the Naval Hospital in Oakland, CA, are presently undetermined. A case report was presented on one patient where residual barium in the colon created problems with another imaging study. A routine Tc-99m sulfur colloid liver scan showed conflicting results related to a defect of the spleen. An abdominal x-ray taken immediately after the scan revealed residual barium in the colon from an upper gastrointestinal tract series done the previous day.

Documents: Authors: B. Rama Rao, M.D.; James W. Winebright, M.D.; Thomas P. Dresser, Ph.D., M.D. Title: Splenic Artifact Caused by Barium in the Colon. Journal: Unknown. Document Type: Journal Article. Date: Unknown

NAVY 1944–1974 (CONTINUED)

Naval Hospital, Pensacola, FL

Start Date	Number	Title
1971	**NHPTS-001**	**Postpartum chest x-ray studies of 1,000 patients to determine incidence of pneumopericardium and pneumomediastinum**

Abstract: From 1971 to 1972, researchers from the Naval Hospital in Portsmouth, VA, and the Naval Hospital in Pensacola, FL, investigated the frequency of air or gas in the pericardial cavity or mediastinal space as a postpartum complication. Case reports were presented from two patients who developed postpartum pneumopericardium without associated pneumomediastinum following vaginal deliveries. Researchers were interested in the frequency of this unusual dissociation. One thousand women participated in a follow-up survey. Chest x-rays taken one to two days after giving birth were examined for pneumopericardium or pneumomediastinum. It was believed that one causative factor was the Valsalva maneuver during the "bearing down" phase of delivery. While 51 percent of the participants were first-time pregnancies, where second stage labor is relatively prolonged and increased, Valsalva activity is common, and no evidence of either condition was found. Researchers concluded that such postpartum complications are uncommon or benign when they occur.

Documents: Author: Robert L. Baker, Capt., MC, USN. Title: CICC 2-08-517, Postpartum Chest X-Ray Studies of 1,000 Patients to Determine Incidence of Pneumopericardium and Pneumomediastinum. Document Type: Report. Date: 11 August 1972

Authors: J. A. Sebastian; R. L. Baker. Title: Postpartum Chest X-Ray Studies of 1,000 Patients to Determine Incidence of Pneumopericardium and Pneumomediastinum. Document Type: Abstract. Date: 1972

Start Date	Number	Title
Unknown	**NHPEN-001**	**Alterations in renal clearance of digoxin as modified by volume loading, alkalinization and diuretics as measured by radioimmunoassay technique**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
Unknown	**NHPEN-002**	**Clinical study of intraocular lenses**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

NAVY 1944–1974 (CONTINUED)

Naval Hospital, Philadelphia, PA

Start Date	Number	Title
1967	**NHPHIL-004**	**Chemotherapy of selected blood disease**

Abstract: From 1967 to 1973, researchers from the Naval Hospital in Philadelphia, PA, investigated methods for the early treatment of cancer. This study was part of a cooperative program to systematically place, initiate, execute, evaluate, analyze, and report on methods of diagnosis and treatment of neoplastic disease. Three hundred five patients participated in the cooperative study. Exposure to radiation was incidental to participation in this study. Progress was reported in the response rates and survival times in acute leukemias, Hodgkin's disease, early stages of malignant lymphomas, breast cancer, testicular cancer, sarcoma, certain childhood solid tumors, gestational tumors, and adenocarcinoma of the large bowel.

Documents: Authors: R. A. Burningham; C. Caldwell; A. Suvari. Title: Abstract of Progress: Chemotherapy of Selected Blood Disease. Document Type: Abstract. Date: 1972 est.

Title: Abstract of Progress on CIP Project 3-05-152. Document Type: Abstract. Date: 1972 est.

Start Date	Number	Title
1967	**NHPHIL-009**	**Treatment and retention of naval personnel evaluation of false Master's test**

Abstract: From 1967 until a presently undetermined date, researchers from the Naval Hospital in Philadelphia, PA, studied clinical, electrocardiography (ECG), hemodynamic, and coronary features of patients with angina pectoris (AP), normal coronary anatomy, and positive ECG stress tests. Forty-nine patients participated. Coronary artery blood flow pressure and resistance at rest and during activity were measured by coronary arteriography obtained during diagnostic cardiac cathertization. Comparisons with patients of similar age whose AP syndrome was based on coronary artery obstruction were made. Heart stress and oxygen use were compared as well. Exposure to radiation was incidental to participation in this study. Results of this study are not available at this time.

Documents: Authors: C. J. Pepine; C. R. Bemiller. Title: Treatment and Retention of Naval Personnel Evaluation of False Master's Test. Document Type: Summary. Date: 14 December 1973

Start Date	Number	Title
1971	**NHPHIL-014**	**Ileal reflux after gastric alkalization coagulation system in patients with chronic hypoxia**

Abstract: From 1971 to 1972, researchers from the Naval Hospital in Philadelphia, PA, investigated the usefulness of barium enemas to relax the small intestine ileal sphincter. The relationship between stimulation of gastrin release by raising the pH of the stomach contents and the ability to reflux barium into the small intestine during barium enema examination was evaluated. To

NAVY 1944–1974 (CONTINUED)

Naval Hospital, Philadelphia, PA (continued)

date, no information is available on the number of subjects. X-rays were taken of patients who did not show terminal ileal reflux during routine barium enema examinations. Results of this study are not available at this time.

Documents: Authors: G. M. Jervey. Title: Ilial Reflux After Gastric Alkalization Coagulation System in Patients with Chronic Hypoxia. Document Type: Report. Date: 1 February 1972

Start Date	Number	Title
1971	**NHPHIL-027**	**Study of coagulation system in patients with chronic hypoxia**

Abstract: From 1971 to 1972, researchers from the Naval Hospital in Philadelphia, PA, examined the effects of reduced oxygen supply (hypoxia) on platelet function and blood clotting disorders. At least twenty patients with clinically diagnosed hypoxia participated. The results of this study are not available at this time. Radiation exposures were not specified in available documents.

Documents: Author: R. A. Burningham, Capt., MC, USN. Title: Study of Coagulation System in Patients with Chronic Hypoxia CICC 2-05-608. Document Type: Report. Date: 1 February 1972

Authors: Richard. A. Burningham, Capt., MC, USN. Title: Study of Coagulation System in Patients with Chronic Hypoxia. Document Type: Proposal. Date: 1972

Start Date	Number	Title
1972	**NHPHIL-002**	**Preventive control of hyperlipemia in naval personnel**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1972	**NHPHIL-006**	**Use of cephalothin peritoneal irrigation in appendicitis**

Abstract: From 1972 to 1975, researchers from the Naval Hospital in Philadelphia, PA, compared complication rates for treatment of the peritoneal site following appendectomy. Incision sites were irrigated with saline or cephalothin, or not irrigated, and infection rate was measured. Approximately 150 appendectomy patients participated. The results of this study are not available at this time. Radiation exposures were incidental to participation.

Documents: Title: Use of Cephalothin Peritoneal Irrigation in Appendicitis. Document Type: Event Profile. Date: 1994

Start Date	Number	Title
1972	**NHPHIL-010**	**Inflammatory dermatophytosis in military personnel: the role of delayed hypersensitivity in prevention of infection**

Abstract: In 1972, researchers from the Naval Hopital in Philadelphia, PA, proposed to evaluate immunizations for prevention of superficial fungal infections, such as ringworm and athlete's

NAVY 1944–1974 (CONTINUED)

Naval Hospital, Philadelphia, PA (continued)

foot. Many dermatophyte skin infections contributed to non-combat disability where men were stationed in tropical environments. The proposal called for twenty participants, and the study was scheduled to run through the middle of 1976. Five purified fungal compounds were to be tested for hypersensitivity reactions, delayed hypersensitivity, and reinfection. The results of this study are not available at this time. Radiation exposures were incidental to participation.

Documents: Author: W. L. Davis. Title: Inflammatory Dermatophytosis in Military Personnel. The Role of Delayed Hypersensitivity in Prevention of Infection. Document Type: Proposal. Date: 1973

Start Date	Number	Title
1973	**NHPHIL-003**	**Histochemical determination of enzymatic activity in blood disorders**

Abstract: In 1973, researchers from the Naval Hospital in Philadelphia, PA, examined the patterns of phosphorylase activity in acute and chronic leukemia, myelofibrosis, polycythemia rubra vera, leukemoid reaction, and preleukemic states. Twelve patients participated. The results of this study are not available at this time. Radiation exposures were incidental to participation.

Documents: Authors: R. A. Burningham; J. E. Engeler, Jr. Title: Abstract of Progress: Histochemical Determination of Enzymatic Activity in Blood Disorders. Document Type: Abstract. Date: 1973 est.

Start Date	Number	Title
1973	**NMCSD-153**	**Evaluation of upper gastrointestinal (UGI) bleeding in military personnel utilizing duodenoscopy**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1974	**NHPHIL-008**	**Evaluation of small bowel microflora in cancer patients with and without therapy and their possible role in systemic infectious complications**

Abstract: From 1974 until a presently undetermined date, researchers from the Naval Hospital in Philadelphia, PA, followed changes in the microflora of the small bowel of cancer patients before and during immunosuppressive therapy. The study determined the advisability of co-administering antimicrobal therapy and revealed whether organisms colonizing in the small bowel cause systemic complications. Forty patients with lymphoma, leukemia, and/or solid tumors participated. Hematological and immunological parameters were followed during treatment. Small bowel samples were obtained by oral intubation placed fluoroscopically at the ligament of Tritz. Radiation exposures are not available at this time.

Documents: Title: Evaluation of Small Bowel Microflora in Cancer Patients With and Without Therapy and Their Possible Role in Systemic Infectious Complications. Document Type: Event Profile. Date: 1994

NAVY 1944–1974 (CONTINUED)

Naval Hospital, Philadelphia, PA (continued)

Start Date	Number	Title
1974	**NHPHIL-011**	**Assessment of platelet function in patients with coronary artery disease**

Abstract: From 1974 to 1976, researchers from the Naval Hospital in Philadelphia, PA, studied platelet aggregation in coronary artery disease. Platelet function was assessed by carbon-14 serotonic uptake and release. Twenty-five patients participated before and after undergoing contrast studies, including intravenous pyelograms, cholecystography, and angiography. Some platelets of patients with coronary artery disease showed a hypersensitive aggregation response.

Documents: Author: [J. Lazarchick]. Title: Abstract of Progress on CIP Project 5-05-560. Document Type: Abstract. Date: 1975 est.

Start Date	Number	Title
1974	**NHPHIL-012**	**Cholinergic therapy of reflux esophagitis in post-gastrectomy patients: randomized double-blind crossover study**

Abstract: In 1974, researchers from the Naval Hospital in Philadelphia, PA, proposed to study the effects of bethanecol on heartburn symptoms, antacid consumption, and esophagitis. Bethanecol stimulates smooth muscle contractions and is used to treat gastrointestinal reflux. The proposal called for fifty patients who had been treated previously with vagotomies (surgical lesions of the vagus nerve) and antrectomies (surgical excision of part of the stomach). The drug effects were easier to follow in patients who met these criteria. Before inclusion in the study, all participants were to receive an upper gastrointestinal (UGI) series, UGI endoscopy, esophageal biopsies, esophageal manometry, and electrocardiogram. Results of this study are not available at this time.

Documents: Authors: Thomas. J. Humphries, Lt. Comdr., MC, USN; Donald. O. Castell; Richard Harold Higgs. Title: Cholinergic Therapy of Reflux Esophagitis in Post-Gastrectomy Patients: A Randomized Double-Blind Crossover Study. Document Type: Proposal. Date: 25 April 1974

Start Date	Number	Title
1974	**NHPHIL-015**	**Urinary acidification and ammonia levels in cirrhotic and normal subjects**

Abstract: In 1974, researchers from the Naval Hospital in Philadelphia, PA, proposed to assess the effects of ascorbic acid (vitamin C) on blood and urine pH. The proposal called for twenty patients, ten cirrhotic and ten normal controls. Baseline serum and urine ammonia levels and urine pH were to be measured while fasting on three consecutive days. After an ammonia tolerance test, patients were to ingest a solution containing 5 grams of ammonia acetate. Serum and urine ammonia levels and urine pH were to be measured after zero, thirty, and sixty minutes. Participants were to take 1 gram of vitamin C four times a day for five days, and the above tests were to be repeated. The results of this study are not available at this time. Radiation exposures were incidental to participation.

Documents: Author: Frank Garcia. Title: Urinary Acidification and Ammonia Levels in Cirrhotic and Normal Subjects. Document Type: Proposal. Date: 1 October 1974

NAVY 1944–1974 (CONTINUED)

Naval Hospital, Philadelphia, PA (continued)

Start Date	Number	Title
1974	**NHPHIL-016**	**Clinical effect of topical 1% 8-methoxypsoralen followed by near ultraviolet light on proven dermatophytosis**

Abstract: From 1974 to 1976, researchers from the Naval Hospital in Philadelphia, PA, conducted clinical trials for 8-methoxypsoralen (8-MOP) with or without ultraviolet (UV) exposure as a treatment for superficial fungal infections of the hands and feet. Twenty-four patients participated. Dermatophytosis lesions were painted with 1 percent 8-MOP. After thirty to sixty minutes, lesions were irradiated with a UVA source at a distance of one foot for ten to twenty minutes. Only non-ionizing radiation was applied. Therapy was considered ineffective.

Documents: Author: Harry. L. Parlette. Title: The Clinical Effect of Topical 1% 8-Methoxypsoralen Followed by Near Ultraviolet Light on Proven Dermatophytosis. Document Type: Proposal. Date: 1974 est.

Start Date	Number	Title
Unknown	**NHCHEL-022**	**Eosinophilia kinetics and function in hypereosinophilia syndromes**

Abstract: The inclusive dates for this study at the Naval Hospital in Philadelphia, PA, are presently undetermined. Researchers measured the clearance of tagged eosinophils from circulation. Correlations between the slope of the clearance rate and symptoms related to histamine, 5-hydroxytryptamine, and bradykinin were calculated. Ten to fifteen patients participated. The results of this study are not available at this time. Radiation environments were not specified in available documents.

Documents: Authors: R. A. Burningham; D. N. Pasquale. Title: Eosinophilia Kinetics and Function in Hypereosinophilia Syndromes. Journal: *U. S. Navy Medicine.* Document Type: Abstract. Date: 1972

Start Date	Number	Title
Unknown	**NHPHIL-001**	**Evaluation of the cardiovascular and anti-anginal effect of mixidine**

Abstract: The inclusive dates for this study conducted at the Naval Hospital in Philadelphia, PA, are presently undetermined. Researchers evaluated drug therapy with vasodilators for treatment of angina pectoris. Mixidine was studied to learn if it would benefit patients with stress-induced angina by reducing the oxygen requirement of the heart. Twenty patients participated. Researchers improved the quality of patient care, provided experience to residents in treating tachycardia and administering exercise stress testing, and provided an understanding of the mechanisms and basic pathology of angina pectoris. Radiation exposures were incidental to participation.

Documents: Title: Evaluation of the Cardiovascular and Anti-Anginal Effect of Mixidine. Document Type: Event Profile. Date: 1994

NAVY 1944–1974 (CONTINUED)

Naval Hospital, Philadelphia, PA (continued)

Start Date	Number	Title
Unknown	**NHPHIL-005**	**Study of incidence of deep vein thrombosis in post-op and bedridden patients using impedance phlebography techniques**

Abstract: The inclusive dates for this study conducted at the Naval Hospital in Philadelphia, PA are presently undetermined. In an effort to prevent fatal pulmonary embolism originating in leg veins, researchers evaluated the effectiveness of impedence phlebography as a non-invasive screening technique. Twenty-seven patients admitted to the General Surgery Service were followed through their pre-, intra-, and post-operative courses using the impedance phlebograph to diagnose possible latent deep vein thromboses. The results of this study are not available at this time.

Documents: Title: Study of Incidence of Deep Vein Thrombosis in Post-Op and Bedridden Patients Using Impedance Phlebography Techniques. Document Type: Event Profile. Date: 1994

Start Date	Number	Title
Unknown	**NHPHIL-007**	**Vitamin E levels in patients with cirrhosis**

Abstract: The inclusive dates for this study conducted at the Naval Hospital in Philadelphia, PA, are presently undetermined. Researchers investigated the incidence of vitamin E deficiency in patients with cirrhosis of diverse etiologies. Levels of vitamin E were correlated with the presence or absence of hemolysis and sensitivity of red blood cells to the peroxide hemolysis test. Twenty-five patients took part in the study, in addition to an unspecified number of normal subjects. The results of this study are not available at this time. Radiation exposures were incidental to participation.

Documents: Title: Vitamin E Levels in Patients with Cirrhosis. Document Type: Event Profile. Date: 1994

Start Date	Number	Title
Unknown	**NNMC-030**	**Platelet function in patients with lymphoma and solid tumor prior to, during, and after therapy**

Abstract: The inclusive dates for this study conducted at the Naval Hospital in Philadelphia, PA, are presently undetermined. Researchers examined whether specific platelet function abnormalities occur in patients with solid tumors and lymphomatus disease. Fifteen patients with metastatic carcinoma and seven with lymphoma participated. Ten patients without hematologic disease or tumors participated as controls. At the time of diagnosis and before therapy, patients underwent plasmapheresis. Platelets were tagged with chromium-51 and, after one hour, re-infused into the patients. Blood samples were drawn hourly for six hours. Platelet half-life was determined through the use of a gamma counter; platelet aggregation and adhesiveness were also studied. The studies were repeated during and following therapy. Results indicated no disturbance in platelet function as compared to the normal controls.

Documents: Author: Richard A. Burningham, Capt., MC, USN. Title: Study Proposal: Platelet Function in Patients with Lymphoma and Solid Tumors Prior To, During, and After Therapy. Document Type: Proposal. Date: 1972

NAVY 1944–1974 (CONTINUED)

Naval Hospital, Philadelphia, PA (continued)

Authors: D. N. Pasquale; C. Caldwell; A. Suvari. Title: Abstract of Progress: Platelet Function in Patients with Lymphoma and Solid Tumors Prior To, During, and After Therapy. Document Type: Abstract. Date: 1972

Authors: D. N. Pasquale; C. Caldwell; A. Suvari. Title: Platelet Function in Patients with Lymphoma and Solid Tumor Prior To, During, and After Therapy. Document Type: Abstract. Date: 1972

Authors: R. A. Burningham; C. Caldwell; A. Suvari. Title: Abstract of Progress: Platelet Function in Solid Tumors and Lymphoma. Document Type: Abstract. Date: 1972 est.

Title: Abstract of Progress of CPI Project 3-05-125. Document Type: Abstract. Date: 1972 est.

Start Date	Number	Title
Unknown	**NNMC-032**	**Clinical evaluation of a tin electron filter for cobalt-60 radiation therapy utilizing a thermoluminescenic dosimetry system effect on skin sparing**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Naval Hospital, Portsmouth, VA

Start Date	Number	Title
1961	**NHPTS-94**	**Inhibition of thyroid I-131 uptake by parabromdylamine maleate**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1961	**NHPTS-95**	**Analysis of time and concentration components and cardiac output determination obtained from precordial isotope-dilution curves**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1961	**NHPTS-96**	**Simple isotope method for recording the Achilles' tendon reflex in myxedema**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

NAVY 1944–1974 (CONTINUED)

Naval Hospital, Portsmouth, VA (continued)

Start Date	Number	Title
1964	**NNMC-134**	**Aortic insufficiency and pelvospondylitis in a seropositive female with rheumatoid nodules**

(For abstract and documentation, see National Naval Medical Center, Bethesda, MD.)

Start Date	Number	Title
1971	**NHPTS-004**	**Management of cervical intraepithelial neoplasia with CO_2 laser therapy**

Abstract: From 1971 until 1975 researchers from the Naval Hospital, Portsmouth, VA studied the treatment of cervical intraepithelial neoplasias with cryosurgical techniques, obtaining a clearance rate of approximately 90%. Three-hundred-one patients participated. Preliminary studies using colposcopically directed carbon dioxide (CO_2) laser surgery were begun in 1973. Early results indicated excellent patient acceptance, complete vaporization/excision of the abnormal epithelium, rapid healing, and with the initial group of three months follow-up biopsies, as well as further follow-ups, only one patient showed evidence of residual or recurrent intraepithelial neoplasia in the laser therapy site. Researchers concluded that the ease of administering therapy, outstanding patient acceptance, and apparent high effectiveness warranted continued investigation of CO_2 laser surgery in gynecology. Radiation environments were not specified in available documents.

Documents: Author: Capt. R. T. Upton, MC, USN. Title: The Management of Cervical Intraepithelial Neoplasia with CO_2 Laser Therapy. Document Type: Report. Date: 31 July 1975

Start Date	Number	Title
1971	**NHPTS-001**	**Postpartum chest x-ray studies of 1,000 patients to determine incidence of pneumopericardium and pneumomediastinum**

(For abstract and documentation, see Naval Hospital, Pensacola, FL.)

Start Date	Number	Title
1971	**NHPTS-005**	**Diagnosis and presurgical evaluation of biliary and pancreatic disorders utilizing a fiberjejunoscope**

Abstract: From 1971 to 1974, researchers from the Naval Hospital in Portsmouth, VA, investigated using oral endoscopy to find obstructions in the pancreatic ducts. Routine preoperative evaluation of the biliary and pancreatic duct system via cannulation and visual identification was tested in thirteen patients. The procedure was successful in finding jaundice, pancreatitis, and cancer in seven patients. Radiation environments were not specified in available documents.

Documents: Author: Capt. E. L. Burke. Title: Diagnosis and Presurgical Evaluation of Biliary and Pancreatic Disorders Utilizing a Fiberjejuniscope. Document Type: Abstract. Date: 1972

Author: E. L. Burke, Capt., MC, USN. Title: Diagnosis and Presurgical Evaluation of Biliary and Pancreatic Disorders Utilizing a Fiberjejuniscope. Document Type: Report. Date: 23 May 1973

NAVY 1944–1974 (CONTINUED)

Naval Hospital, Portsmouth, VA (continued)

Start Date	Number	Title
1972	**NHPTS-006**	**Evaluation of inferior esophageal sphincter competence by esophagoscopy**

Abstract: In 1972, researchers from the Naval Hospital in Portsmouth, VA, proposed to study the inferior esophageal sphincter by fiber optic esophagoscope. The study was scheduled to last two years and called for six patients. This study was designed to relate the amount of "open time" of the sphincter to the degree of sphincter competence. In addition, the extent and severity of esophagitis and the presence or absence of hiatal hernia and reflux by x-ray was to be correlated to the amount of "open time." Radiation exposures and results of this study are not available at this time.

Documents: Author: E. L. Burke, Capt., MC, USN. Title: Evaluation of Inferior Esophageal Sphincter Competence by Esophagoscopy. Document Type: Proposal. Date: 1972

Authors: E. L. Burke. Title: Evaluation of Inferior Esophageal Sphincter Competence by Esophagoscopy. Document Type: Abstract. Date: 1972 est.

Start Date	Number	Title
1972	**NHPTS-008**	**Ambulatory treatment of Legg-Calve-Perthes' disease**

Abstract: From 1972 to 1975, researchers from the Naval Hospital in Portsmouth, VA, evaluated treatment regimens of Legg-Calve-Perthes' disease. Abduction was maintained with the use of braces rather than immobilization, casts, and traction, and patients were allowed more mobility during treatment. Forty pediatric patients participated, with the treatment lasting eighteen to thirty-six months. Patients were given clinical and radiological examinations at two to three month intervals during the treatment period. Patients were reevaluated every six to twelve months following completion of treatment. Results of this study are not available at this time.

Documents: Author: C. S. Lambdin, Capt., MC, USN. Title: Ambulatory Treatment of Legg-Calve-Perthes' Disease. Document Type: Proposal. Date: 1972 est.

Author: C. S. Lambdin, Capt., MC, USN. Title: Ambulatory Treatment of Legg-Calve-Perthes' Disease. Document Type: Abstract. Date: 1972 est.

Title: Ambulatory Treatment of Legg-Calve-Perthes' Disease. Document Type: Report. Date: 1973 est.

Start Date	Number	Title
1973	**NHPTS-003**	**Evaluation of post-due obstetric patients**

Abstract: In 1973, researchers from the Naval Hospital in Portsmouth, VA, examined women past their forty- second week of pregnancy to detect patients at risk with postmature fetuses. The study provided standardized care of the post-term patient. Fifty-six obstetric patients participated. Pelvic x-rays taken to observe the position of the fetus (fetograms) would also reveal fetal wasting due to postmaturity. In addition to fetograms, maternal hormone levels and amniotic fluid tests helped in determining whether to induce birth. Within twenty-four hours after birth (naturally

NAVY 1944–1974 (CONTINUED)

Naval Hospital, Portsmouth, VA (continued)

or by induction), estimated fetal maturity was determined. The study showed more individualized management of the post-term patient was preferred.

Documents: Authors: R. T. Upton; J. Sebastian; J. O. Goodwin. Title: Evaluation of Post-Due Obstetric Patients. Document Type: Abstract. Date: 1970 est.

Author: Robert L. Baker, Capt., MC, USN. Title: Evaluation of Post-Due Obstetric Patients. Document Type: Proposal. Date: 1973 est.

From: R. W. Savage. To: Commanding Officer, Naval Health Sciences Education and Training Command. Subject: Identification and Review of Records Related to DoD Human Radiation Experiments. Document Type: Memorandum. Date: 23 February 1994

Start Date	Number	Title
1973	**NHPTS-007**	**Evaluation of post-due obstetric patients**

Abstract: In 1973, researchers from the Naval Hospital in Portsmouth, VA, examined women in their forty-second week of pregnancy to detect patients at risk with postmature fetuses. Pelvic x-rays taken to observe the position of the fetus (fetograms) would also reveal fetal wasting due to postmaturity. The study provided standardized care of the post-term patient. Fifty-six obstetric patients participated. Results of this study are not available at this time.

Documents: Title: Evaluation of Post-Due Obstetric Patients. Document Type: Event Profile. Date: 1994

Start Date	Number	Title
Unknown	**NNMC-010**	**Blood volume studies in thoracic surgical patients using radioactive iodinated human serum albumin**

(For abstract and documentation, see Naval Hospital, Bethesda, MD.)

Naval Hospital, St. Albans, Long Island, NY

Start Date	Number	Title
1950	**NHSTALB-08**	**Radiation treatment: correlation of predisposition to radiation illness to other clinical findings in patients receiving radiation therapy**

Abstract: From 1950 until a presently undetermined date, researchers from Naval Hospital, St. Albans, in Long Island NY, investigated the factors responsible for the natural resistance of man to general and local effects of ionizing radiation. Twenty radiation therapy patients participated. Researchers observed the occurrence of radiation sickness in patients undergoing radiation therapy. All patients received only those dosages indicated for their disease. Threshold x-ray dose levels for the production of the various symptoms and changes were determined with due consideration for field size of the irradiated area, overall exposure time, section of the body, and disease for which the patient was being irradiated. The radiation exposure and results of this study are not available at this time.

NAVY 1944–1974 (CONTINUED)

Naval Hospital, St. Albans, Long Island, NY (continued)

Documents:

From: W. T. Brown. To: Chief of Naval Medical Research Institute. Subject: Collaboration by U. S. Naval Hospital, St. Albans, New York, in BuMed Research Project NM006012 : Medical Defense Aspects of Atomic Warfare. Document Type: Memorandum. Date: 1 May 1950

From: C. C. Shaw, Chief, Bureau of Medicine and Surgery. To: Commanding Officer, U. S. Naval Hospital, St. Albans, New York. Subject: Research Proposal: Radiation Treatments. Correlation of Predisposition to Radiation Illness to Other Clinical Findings in Patients Receiving Radiation Therapy. Document Type: Memorandum. Date: 26 June 1950

Author: Comdr. S. F. Williams, MC, USN. Title: Bureau of Medicine and Surgery, Research Division NM007 086.08 Radiation Treatment: Correlation of Predisposition to Radiation Illness to Other Clinical Findings in Patients Receiving Radiation Therapy. Document Type: Proposal. Date: 26 June 1950

Author: Comdr. S. F. Williams, MC, USN. Title: Bureau of Medicine and Surgery, Research Division NM006 012.5(2) Radiation Treatment: Correlation of Predisposition to Radiation Illness to Other Clinical Findings in Patients Receiving Radiation Therapy. Document Type: Proposal. Date: 1950

From: S. F. Williams, Chief of X-Ray. To: Commanding Officer. Subject: Semi-Annual Research Progress Summary for Period Ending 31 December 1950. Document Type: Memorandum. Date: 22 January 1951

Start Date	Number	Title
1950	**NHSTALB-09**	**Action of a flavinoid compound (vitamin C.V.P.) in conjunction with vitamin C on skin erythemas caused by radiation from radioactive substances**

Abstract:

From 1950 until 1951, researchers at the Naval Hospital, St. Albans, in Long Island, NY, investigated the effects of a vitamin-enriched salve on skin tolerance to radiation treatments for tumors. The objective was to determine if the salve could increase the skin's tolerance and recovery to radiation exposure, thereby enabling higher radiation doses to be used in treatment. Five radiation therapy patients that were being treated in the normal routine participated in this study. Radiation doses within the treatment series and results of this study are not available at this time.

Documents:

From: Harold A. Lyons, CDR, MC, USN, Chief of Research. To: Chief, Bureau of Medicine & Surgery, Research Division. Subject: Research Proposal: The Action of a Flavinoid Compound in Conjunction with Vitamin C on Skin Erythemas Caused by Radiations from Radioactive Subst. Document Type: Memorandum. Date: 31 July 1950

From: Chief, Bureau of Medicine and Surgery. To: Chief of Research, U. S. Naval Hospital, St. Albans, New York. Subject: Research Proposal: The Action of Flavinoid Compound (Vitamin C.V.P.) in Conjunction with Vitamin C on Skin Erythemas Caused by Radiations from Radioactive Substances and X-Rays. Document Type: Memorandum. Date: 6 September 1950

From: Chief, Bureau of Medicine and Surgery. To: Commanding Officer, U. S. Naval Hospital, St. Albans, New York. Subject: [research studies approval]. Document Type: Memorandum. Date: 2 October 1950

Author: Paul R. Kline M.D. Title: Research Proposal; BuMed 98 (Rev. 10/49). Document Type: Proposal. Date: 2 October 1950

From: L. K. MacClatchie, Capt., MC, USN, Chief, Dermatology Service. To: Chief of Research. Subject: Research Projects [Projects EM 007 086.04 and NM 007 086.10]. Document Type: Memorandum. Date: 12 December 1950

From: Chief, Bureau of Medicine and Surgery. To: Commanding Officer, U. S. Naval Hospital, St. Albans, New York. Subject: Research Study NM 007 086.10: The Action of a Flavinoid Compound (Vitamin C.V.P.) in Conjunction with Vitamin C on Skin Erythemas Caused by Radiations from Radioactive Substances—Cancellation of. Document Type: Memorandum. Date: 28 August 1951

NAVY 1944–1974 (CONTINUED)

Naval Hospital, St. Albans, Long Island, NY (continued)

Title: Semi-Annual Progress Summary for Period Ending 31 Dec 1950. Document Type: Report. Date: 1951

Authors: Dr. Paul K. Kline; Lt. Wayne L. Wright, MC, USN. Subject: [summary of project results]. Document Type: Report. Date: 1951 est.

Start Date	Number	Title
1956	**NHSTALB-07**	**Studies of localization of radioactive gallium in bone lesions**

Abstract: In 1956, researchers from the Naval Hospital, St. Albans, in Long Island, NY, developed a method for localizing bone lesions through the administration of radioactive gallium (Ga-72). Two patients participated in this study. Forty-eight hours before surgery, Ga-72 was administered to facilitate the removal of cancer from bone tissue. Radiation exposures and results of this study are not available at this time.

Documents: Title: Studies of Localization of Radioactive Gallium in Bone Lesions. Document Type: Event Profile. Date: 1994

Start Date	Number	Title
1958	**NHSTALB-14**	**Influence of chelates on the metabolism of radioyttrium**

(For abstract and documentation, see Long Island Jewish Hospital, New Hyde Park, NY.)

Start Date	Number	Title
1959	**NHSTALB-13**	**External recording method for estimating hepatic blood flow with use of radiogold**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1960	**NHSTALB-12**	**Use of femoral arteriography in assessment of bleeding in pregancy**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1961	**NHSTALB-11**	**Findings of retrograde femoral arteriographpy in choriocarcinoma**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

NAVY 1944–1974 (CONTINUED)

Naval Hospital, St. Albans, Long Island, NY (continued)

Start Date	Number	Title
Unknown	**NHSTALB-05**	**Studies of the localization of radioactive gallium in bone lesions**

Abstract: From a presently undetermined date until 1956, researchers from the Naval Hospital, St. Albans, in Long Island, NY, modified a method for localizing bone lesions through the administration of radioactive gallium (Ga-72) and using external scintillation counting. Previous studies showed that gallium and its radioisotopes had particular affinity for areas where bone was forming or healing. These assessments were limited in accuracy and reproducibility. By modifying the bone scanning technique, investigators intended to eliminate the previous limitations. One hundred forty-four patients participated. Malignant lesions imaged by Ga-72 scanning techniques suggested that this method was useful in studying specific cases but that it was of limited value in the routine diagnosis of bone metastases. Imaging of nonmalignant bone lesions showed that in the healing phase of osteomyelitis and during callus formation and resolution in fractures, significant selective localization of Ga-72 occurs at the site of the lesion. Fracture imaging with Ga-72 scanning through a cast was found to be useful in the study of the healing process.

Documents: Title: Studies of the Localization of Radioactive Gallium in Bone Lesions. Document Type: Event Profile. Date: 1994

Start Date	Number	Title
Unknown	**NNMC-010**	**Blood volume studies in thoracic surgical patients using radioactive iodinated human serum albumin**

(For abstract and documentation, see Naval Hospital, Bethesda, MD.)

Naval Hospital/Medical Center, San Diego, CA

Start Date	Number	Title
1953	**NMCSD-288**	**Further experience with parametrial radiogold as an adjunct to radium therapy in treatment of pelvic lymph nodes in cancer of the cervix**

Abstract: From 1953 until 1960, researchers from the Naval Hospital in San Diego, CA, investigated the use of parametrial radiogold as an adjunct to radium therapy in the treatment of cervical cancer. Fifty-five patients with cancer of the uterine cervix were treated with intracavitary radium and transvaginal radiogold into both parametria. Forty-six patients had clinical Stage I lesions and the remaining nine patients had clinical Stage II lesions. Of the total number of patients treated, fifteen required further surgical intervention for recurrence of tumor after irradiation. Residual invasive tumors found in postoperative cervices were removed because of cancer in situ or some benign condition, complications of radiation therapy, and as an adjunct to facilitate radiation therapy. All of the surgical procedures carried out for the complications of irradiation and the recurrence of tumor and tumor residual were successful as of the date of publication of

NAVY 1944–1974 (CONTINUED)

Naval Hospital/Medical Center, San Diego, CA (continued)

the final report. Although researchers determined that the use of the treatment was not totally without danger (as evidenced by the 9 percent incidence of complications), the overall survival incidence of 90.9 percent was thought to be evidence in favor of continuing the therapy as an adjunct to radium therapy for cancer of the uterine cervix. The study was published in 1961.

Documents: Title: Parametrial Radiogold in Cancer of the Cervix. Journal: *American Journal of Obstetrics and Gynecology*, vol. 81, issue 4. Document Type: Journal Article; Excerpt. Date: April 1961

Start Date	Number	Title
1957	**NMCSD-253**	**Surface moulage treatment techniques utilizing cobalt-60 teletherapy. A follow-up study.**

Abstract: From 1957 to 1968, researchers from the Naval Medical Center in San Diego, CA, examined the effects of wax or resin applied to the skin (surface moulage) in the radiation treatment of carcinomas of the ear, nose, and penis. The purpose of the study was to find an alternative treatment to surgery that would provide no loss of function and good cosmetic results. Forty-seven patients participated. Results showed that surface moulage with cobalt-60 teletherapy was simple, convenient, increased the uniformity of dose on irregular surfaces, and provided good clinical control. Therapy provided rapid healing and excellent cosmetic results.
A 94 percent one-year survival rate was maintained through the fifth year of this study. Radiation doses within the treatment series are not available at this time.

Documents: Title: Medline Express Printout: Surface Moulage Treatment Techniques Utilizing Cobalt-60 Teletherapy. A Follow-up Study. Document Type: Abstract; Search Printout. Date: 1994

Start Date	Number	Title
1971	**NMCSD-018**	**Fracture of the ankle in a military population**

Abstract: In 1971, researchers at the Naval Medical Center in San Diego, CA (NMCSD), proposed a retrospective study to evaluate the functional radiographic results of ankle fracture treatment at NMCSD from 1966 to 1972. The evaluation involved review and analysis of hospital records and x-rays of ankle fractures treated at this facility. If possible, patients were to be contacted for follow-up, the results of which were to be studied in relation to the known biomechanical principles governing ankle joint fractures. The study was to culminate in the proposal of a method for the x-ray evaluation of adequate fracture reduction and the outlining of basic principles of operative treatment. Researchers estimated completing the study in 1975. Results of this study are not available at this time.

Documents: Author: J. S. Sarkisian, Lt., MC, USN. Title: Fracture of the Ankle in a Military Population. Document Type: Proposal. Date: 1975

NAVY 1944–1974 (CONTINUED)

Naval Hospital/Medical Center, San Diego, CA (continued)

Start Date	Number	Title
1971	**NMCSD-011**	**Treatment of tibial fractures with electric microcurrent**

Abstract: In 1971, researchers from the Naval Medical Center in San Diego, CA, proposed to evaluate the application of electrical microcurrents in accelerated healing of stress fractures. The researchers planned to have four basic trainees with upper tibial fractures participate and estimated completing the study in 1972. Physical and x-ray examinations were to be repeated until clinical evidence of complete healing was achieved. Radiation exposures and results of this study are not available at this time.

Documents: Author: G. W. Cady, Capt., MC, USN. Title: Treatment of Tibial Fractures with Electric Microcurrent. Document Type: Proposal. Date: 12 January 1971

Start Date	Number	Title
1972	**NMCSD-002**	**Significance of positive ipsilateral nodes in resections of the lung**

Abstract From 1972 to 1974, researchers from the Naval Medical Center in San Diego, CA, evaluated the significance of positive lymph nodes on the same side as the involved lung when surgically treating bronchogenic carcinoma. Seventy-five patients participated. In addition to routine pulmonary function studies, patients underwent further testing, treatment, and surgery based on the results of lymph node biopsy and presence of metastases. Mediastinoscopy was used to evaluate all patients with bronchogenic carcinoma; abnormal findings contraindicated further surgical treatment. The attrition rate of seventy-five patients with bronchogenic carcinoma and positive mediastinal lymph node biopsies was greater than 90 percent at two years. Therapeutic irradiation to the mediastinum was given to three patients, but the exposures were not specified in available documents.

Documents: Authors: R. G. Fosburg, Capt.; M. J. O'Sullivan, Comdr.; P. Ah-Tye, Capt. et al. Title: Positive Mediastinoscopy: An Ominous Finding. Journal: *The Annals of Thoracic Surgery*. Document Type: Journal Article; Excerpt. Date: 1974 est.

Start Date	Number	Title
1972	**NMCSD-003**	**Chemotherapeutic agents in the treatment of lung tumors**

Abstract: From 1972 until a presently undetermined date, researchers from the Naval Medical Center in San Diego, CA, evaluated chemotherapeutic agents in the treatment of advanced lung cancer. CCNU (lomustine) was used to treat forty-one patients with unresectable carcinoma of the lung. CCNU was effective in relieving symptoms but not curing lung cancer. Radiation exposure was incidental to participation.

Documents: Title: Chemotherapeutic Agents in the Treatment of Lung Tumors. Document Type: Abstract. Date: 1972

NAVY 1944–1974 (CONTINUED)

Naval Hospital/Medical Center, San Diego, CA (continued)

Start Date	Number	Title
1972	**NMCSD-004**	**Extracranial suspension versus inter- or intra-osseus support in treatment of facial fracture**

Abstract: From 1972 until a presently undetermined date, researchers from the Naval Medical Center in San Diego, CA, compared treatment methods and management of facial fractures. Healing of facial fractures treated with extracranial suspension was compared with fractures stabilized by internal fixation methods. Radiographic studies were performed in the evaluation of fourteen orthopedic patients. Results of this study are not available at this time.

Documents: Title: Extracranial Suspension versus Inter- or Intra-osseus Support in Treatment of Facial Fracture. Document Type: Abstract. Date: 1972 est.

Title: [Patient Profile, Extracranial Suspension Versus Inter- or Intra-osseus Support in Treatment of Facial Fracture]. Document Type: Report; Excerpt. Date: 1975 est.

Start Date	Number	Title
1973	**NMCSD-005**	**Pancreatico-cholangiography and manometry of sphincter of Oddi**

Abstract: From 1973 until a presently undetermined date, researchers from the Naval Medical Center in San Diego, CA, measured the pressure generated by the sphincter of Oddi during imaging studies of pancreatic and bile ducts. Sixty patients undergoing evaluation of acute and recurrent pancreatitis and post-cholecystectomy syndrome participated. Radiation exposure and results of this study are not available at this time.

Documents: Title: Clinical Evaluation of Sphincter of Oddi Manometry. Document Type: Report. Date: 1973 est.

Start Date	Number	Title
1973	**NMCSD-006**	**Results of clubfoot treatment**

Abstract: From 1973 until a presently undetermined date, researchers from the Naval Medical Center in San Diego, CA, reviewed orthopedic methods of treating clubfoot. Factors leading to unsatisfactory functional results were identified, and treatment guidelines were provided. Although to date no information is available on the number of study participants, seventy-two feet were examined. Evaluations consisted of interviews, physical exams, x-rays, and photographs. Results of this study are not available at this time.

Documents: Title: [Proposal Excerpt for Study: Results of Clubfoot Treatment]. Document Type: Proposal; Excerpt. Date: 1973 est.

Title: Results of Clubfoot Treatment. Document Type: Abstract. Date: 1973 est.

NAVY 1944–1974 (CONTINUED)

Naval Hospital/Medical Center, San Diego, CA (continued)

Start Date	Number	Title
1973	**NMCSD-007**	**Colonoscopy in differential diagnosis of inflammatory bowel disease**

Abstract: In 1973, researchers from the Naval Medical Center in San Diego, CA, assessed colonoscopy as a diagnostic tool in cases of rectal bleeding and passage of bloody stool. Twenty patients with hematochezia participated. Investigators concluded colonoscopy should be included as a routine diagnostic procedure in all cases of hematochezia.

Documents: From: Commanding Officer, Naval Health Sciences Education and Training Command. To: Commanding Officer, Naval Regional Medical Center, San Diego, CA 92134. Subject: Report Approval. Document Type: Memorandum. Date: 5 August 1975

Title: Colonoscopy in the Differential Diagnosis of Inflammatory Bowel Disease. Document Type: Abstract. Date: 1975 est.

Start Date	Number	Title
1973	**NMCSD-010**	**Immunocytoadherence testing in lymphoproliferative disorders**

Abstract: From 1973 to 1974, researchers from the Naval Medical Center in San Diego, CA, analyzed the association between lymphoma and changes in certain characteristics of lymphocytes. One hundred twelve patients participated, with seventy as controls. This study identified and characterized circulating lymphocytes in patients with lymphomas and assessed the effects of subsequent therapy on circulating lymphocytes, with emphasis on changes in types of lymphocytes. Researchers also investigated identifying occult or potential lymphomas. Radiation exposure and results of this study are not available at this time.

Documents: Title: Immunocytoadherence Testing in Lymphoproliferative Disorders. Document Type: Abstract. Date: 1974 est.

Start Date	Number	Title
1973	**NMCSD-012**	**Early diagnosis of aseptic necrosis of the remoral head following traumatic dislocation of hip**

Abstract: From 1973 until a presently undetermined date, researchers from the Naval Medical Center in San Diego, CA, tested radioisotopes for use in imaging studies to identify abnormal healing in upper femur fractures. Seventeen patients with traumatic hip dislocation and femoral neck fractures participated. Technetium-99m was found to be superior to fluoride-18 as a bone scanning agent. Radiation exposures are not available at this time. This study indicated bone scanning should be incorporated as a routine follow-up examination in a larger number of traumatic hip injuries.

Documents: Author: R. L. Nutt, Lt. Comdr., MC, USNR. Title: Early Diagnosis of Aseptic Necrosis of the Femoral Head Following Traumatic Dislocation of the Hip. Document Type: Report. Date: 1974 est.

From: Lt. Comdr. Richard L. Nutt, MC, USNR, Department of Orthopedics. To: Director, Clinical Investigation Center. Subject: Progress Report on CICC 4-16-257 for: Early Diagnosis of Aseptic Necrosis of the Femoral Head Following Traumatic Dislocation of the Hip: A Prospective Study Comparing Fluoride-18, Technetium Polyphosphate and Technetium Diphosphonate. Document Type: Memorandum. Date: 26 February 1975

NAVY 1944–1974 (CONTINUED)

Naval Hospital/Medical Center, San Diego, CA (continued)

Start Date | Number | Title

1973 **NMCSD-015** **Endoscopic electrosurgical polypectomy**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date | Number | Title

1973 **NMCSD-016** **Recurrent lower urinary tract infection in woman: effect of urethral dilation**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date | Number | Title

1973 **NMCSD-153** **Evaluation of upper gastrointestinal (UGI) bleeding in military personnel utilizing duodenoscopy**

(For abstract and documentation, see Naval Hospital, Philadelphia, PA.)

Start Date | Number | Title

1974 **NMCSD-013** **Acromio-clavicular separations**

Abstract: From 1974 until a presently undetermined date, researchers from the Naval Medical Center in San Diego, CA, surveyed differences between surgical and non-surgical treatments of complete shoulder dislocations. In this prospective study, twenty-three patients were clinically evaluated and shoulder x-ray studies were taken. Researchers concluded that minimal immobilization and early shoulder rehabilitation was the recommended treatment of choice for acute, complete, acromioclavicular separations.

Documents: Author: Lt. Comdr. Raymond J. Imatani, MC, USNR. Title: Acromio-Clavicular Separations: A Prospective Study. Document Type: Proposal. Date: 1974 est.

Title: [Acromio-Clavicular Separations; A Prospective Study]. Document Type: Abstract. Date: 1974 est.

Start Date | Number | Title

1974 **NMCSD-014** **Use of non-invasive monitoring technique to evaluate pre- and post-operative arterial blood flow A-S-O**

Abstract: From 1974 until a presently undetermined date, researchers from the Naval Medical Center in San Diego, CA, evaluated reconstruction of the deep femoral artery in the treatment of

NAVY 1944–1974 (CONTINUED)

Naval Hospital/Medical Center, San Diego, CA (continued)

atherosclerotic occlusive disease in the leg. Methods of monitoring blood flow were tested. Radiation exposures were incidental to participation.

Documents: Title: [Use of Non-Invasive Monitoring Technique to Evaluate the Pre- and Post-operative Arterial Blood Flow A-S-O]. Document Type: Report. Date: 1974 est.

Start Date	Number	Title
1974	**NMCSD-252**	**Prostate carcinoma: radiation treatment of the primary and regional lymphatics**

Abstract: In 1974, researchers from the Naval Medical Center in San Diego, CA, reviewed the records of 168 patients with localized or locally advanced carcinoma of the prostate who were treated with radiation between 1959 and 1970. This retrospective study provided evidence that inoperable prostate cancer is curable with radiation. However, there was not any improvement in five- or ten-year survival or disease-free rates with pelvic lymph node treatment.

Documents: Title: Medline Express Printout: Prostate Carcinoma. Radiation Treatment of the Primary and Regional Lymphatics. Document Type: Abstract; Search Printout. Date: 1994

Start Date	Number	Title
Unknown	**NHOAK-006**	**Soft-tissue uptake of Tc-99m MCP in secondary scrotal lymphodema**

Abstract: The inclusive dates for this study conducted at the Naval Hospital in San Diego, CA, are presently undetermined. A case report was presented from one patient diagnosed with adenocarcinoma of the prostate (stage C). A Tc-99m MDP bone scan revealed an enlarged scrotum. The patient underwent surgery and subsequent radiation treatment. Radiation doses within the treatment series and results of this study are not available at this time.

Documents: Authors: B. Rama Rao; David W. Hodgens. Title: Soft-Tissue Uptake of Tc-99m MDP in Secondary Scrotal Lymphedema. Journal: Unknown. Document Type: Journal Article. Date: Unknown

Start Date	Number	Title
Unknown	**NMCSD-009**	**Ketamine anesthesia in minor otologic procedures**

Abstract: From a presently undetermined date until 1974, researchers from the Naval Medical Center in San Diego, CA, evaluated the general anesthetic, ketamine. Eighty-one pediatric patients undergoing minor ear surgeries participated. Preoperative examinations included urinalysis, leukocyte counts, hematocrit, hemoglobin measurements, and chest x-rays. Follow-up visits were scheduled ten to fourteen days after surgery. During follow-up exams, parents were questioned about gastrointestinal and cardiopulmonary symptoms and and behavioral abnormalities. Results of this study are not available at this time.

Documents: Authors: Roper; Kramer. Title: Ketamine Effectiveness. Journal: Unknown. Document Type: Journal Article; Excerpt. Date: 1974 est.

NAVY 1944–1974 (CONTINUED)

Naval Hospital/Medical Center, San Diego, CA (continued)

Start Date	Number	Title
Unknown	**NMCSD-080**	**Phase II trial of three drug regimen consisting of Cytoxan, 5-FU, and cis-platinum in stage D adenocarcinoma of prostate**

Abstract: The inclusive dates for this study conducted from the Naval Medical Center in San Diego, CA, are presently undetermined. Cytoxan, 5-fluorouracil, and cis-platinum were evaluated in the treatment of seventy-five patients with prostate cancer. Radiation therapy or P-32 was used to alleviate bone pain. Radiation doses within the treatment series and results of this study are not available at this time.

Documents: Title: Phase II Trial of Three Drug Regimen Consisting of Cytoxan, 5-FU, and Cis-Platinum in Stage D Adenocarcinoma of Prostate. Document Type: Event Profile. Date: 1994

Naval Medical Clinic, Annapolis, MD

Start Date	Number	Title
1973	**NMCLANNAP-06**	**Fate of the acromioclavicular joint in athletic injuries**

Abstract: From 1973 to 1978, researchers from the Naval Medical Clinic in Annapolis, MD, analyzed treatment methods for one hundred sixty-four acromioclavicular joint injuries. One hundred forty-eight midshipmen from the United States Naval Academy participated. After initial examinations and stress x-rays to confirm the extent of injury, follow-up exams were carried out from six months after injury for up to five years. Injuries were classified as Type 1, 2, or 3, indicating the severity of each type of injury. Evaluation suggested aggressive treatment and rehabilitation were suggested in acute acromioclavicular injuries.

Documents: Author: J. S. Cox. Title: The Fate of the Acromioclavicular Joint in Athletic Injuries. Document Type: Abstract. Date: circa 1978

Author: Capt. Jay S. Cox, MC, USN. Title: Fate of the Acromioclavicular Joint in Athletic Injuries. Journal: *American Journal of Sports Medicine*, vol. 9, issue 1. Document Type: Journal Article. Date: 1981

Start Date	Number	Title
1974	**NMCLANNAP-01**	**Comparison of various means of evaluating the severity of inversion ankle sprains**

Abstract: From 1974 until a presently undetermined date, researchers from the Naval Medical Clinic in Annapolis, MD, compared methods of evaluating the severity of ankle sprains. One hundred active duty military personnel participated. In all ankle sprains requiring surgery, operative findings were compared with preoperative clinical evaluations, radiography, and contrast arthrography. Results of this study are not available at this time.

Documents: Author: H. M. Black. Title: Comparison of Various Means of Evaluating the Severity of Inversion Ankle Sprains. Document Type: Proposal. Date: 1974 est.

NAVY 1944–1974 (CONTINUED)

Naval Medical Clinic, Annapolis, MD (continued)

Start Date	Number	Title
Unknown	**NMCLANNAP-03**	**Study of second degree medial collateral ligament sprains of the knee**

Abstract: The inclusive dates for this study conducted at the Naval Medical Clinic in Annapolis, MD, are presently undetermined. Researchers conducted a retrospective study of twenty patients to learn if a second degree or moderate sprain of the medial collateral ligament of the knee ever tightened from its initial looseness. Researchers also determined the incidence of this injury eventually requiring surgery. Radiation exposure is not available at this time.

Documents: Authors: W. G. Clancy; R. L. Brand; J. S. Cox. Title: Study of Second Degree Medial Collateral Ligament Sprains of the Knee. Document Type: Abstract. Date: 1975 est.

Start Date	Number	Title
Unknown	**NMCLANNAP-07**	**Evaluation of the modified Bristow procedure in treatment of recurrent subluxations and dislocations of shoulder**

Abstract: The inclusive dates for this study conducted at the Naval Medical Clinic in Annapolis, MD, are presently undetermined. Researchers evaluated the effectiveness of a new surgical procedure (the modified Bristow procedure) in the treatment of recurrent partial and complete dislocations of the shoulder. Study participants were 150 young, athletic, active duty military personnel. Radiation exposures were incidental to participation.

Documents: Author: Jay S. Cox, Capt., MC, USN. Title: Evaluation of the Modified Bristow Procedure in the Treatment of Recurrent Subluxations and Dislocations of the Shoulder. Document Type: Proposal. Date: Unknown

Start Date	Number	Title
Unknown	**NMCLANNAP-08**	**Evaluation of the Brostrom procedure for repair of chronic ruptures of the lateral ligaments of the ankle**

Abstract: The inclusive dates for this study conducted at the Naval Medical Clinic in Annapolis, MD are presently undetermined. Researchers evaluated the effectiveness of a new surgical procedure (the Brostrom procedure) for repairing chronic ruptures of ligaments in the ankle. Study participants were thirty-five active duty military personnel who underwent pre-operative stress x-rays.

Documents: Author: Howard M. Black, Lt. Comdr., MC, USNR. Title: An Evaluation of the Brostrom Procedure for Repair of Chronic Ruptures of the Lateral Ligaments of the Ankle. Document Type: Proposal. Date: 1973 est.

Start Date	Number	Title
Unknown	**NMCLANNAP-09**	**Elmslie-Trillat procedures for management of dislocations and subluxations of patella**

Abstract: The inclusive dates for this study conducted at the Naval Medical Clinic in Annapolis, MD, are presently undetermined. Researchers evaluated the effectiveness of a new procedure (the

NAVY 1944–1974 (CONTINUED)

Naval Medical Clinic, Annapolis, MD (continued)

Elmslie-Trillat procedure) for managing partial and complete dislocations of the patella. Study participants were nineteen active duty military personnel. The results are not available at this time. Radiation enivronments were not specified in available documents.

Documents: Author: J. S. Cox. Title: The Elmslie-Trillat Procedure for Management of Dislocations and Subluxations of the Patella. Document Type: Abstract. Date: Unknown

Naval Medical Research Institute, Bethesda, MD

Start Date	Number	Title
Unknown	**NMRI-12**	**Measurements of gaseous exchange in connection with aviation and deep sea diving by techniques employing radioactive substances**

Abstract: From a presently undetermined date until 1944, researchers from the Naval Medical Research Institute in Bethesda, MD, examined the mathematics involved with blood-tissue exchanges of inert gases. Investigators studied the relationship between regional and whole-body uptake of inert gases and the basic principles of cardiac output and functional lung surface measurements. The study is primarily a mathematical analysis, but does include a comparison of theory and experiment for the uptake of radiokrypton by the forearm tissues of a normal subject under normal conditions. Radiation exposures were not specified.

Documents: Title: Study #NMRI-12: Measurements of Gaseous Exchange in Connection with Aviation and Deep Sea Diving by Techniques Employing Radioactive Substances [Report No. 1]. Document Type: Report. Date: 8 May 1944

Authors: Lt. R. E. Smith; Ens. M. F. Morales. Title: On The Theory of Blood-Tissue Exchanges: II. Applications; and III. Circulation and Inert-Gas Exchanges in the Lung with Special References to Saturation. Journal: *Bulletin of Mathematical Biophysics,* vol. 6. Document Type: Journal Article. Date: 1944

Start Date	Number	Title
Unknown	**NMRI-15**	**Beta radiation lesion of the skin**

(For abstract and documentation, see National Naval Medical Center, Bethesda, MD.)

Start Date	Number	Title
1946	**NMRI-01**	**Biological basis of antimony compounds containing radioactive isotopes, the blood-tissue exchange and excretion of antimony in humans given a single dose of tartar emetic**

(For abstract and documentation, see National Naval Medical Center, Bethesda, MD.)

NAVY 1944–1974 (CONTINUED)

Naval Medical Research Institute, Bethesda, MD (continued)

Start Date	Number	Title
1946	**NMRI-09**	**Use of radioactive hydrogen for measurement in vivo of total body water**

Abstract: From 1946 until a presently undetermined date, researchers from the Naval Medical Research Institute in Bethesda, MD, determined total body water content using water with hydrogen atoms replaced by tritium (a radioactive isotope of hydrogen). One individual participated, and animal studies were done as well. Tritiated water of known activity was injected, and plasma radioactivity was measured after a period of equilibrium (approximately one hour). A method was developed for measurement of radioactive water vapor, using a modified Geiger-Muller counter tube. Total-body water measurements using tritiated water agreed (to within 1 percent) with specific gravity measurements.

Documents: Authors: Nello Pace; Leo Kline; Howard Schachman; Morton Harfenist. Title: Use of Radioactive Hydrogen for Measurement in Vivo of Total Body Water. Document Type: Report. Date: 14 November 1946

Start Date	Number	Title
1946	**NMRI-10**	**Biological studies of antimony compounds containing radioactive isotopes: evaluation of the rhodamine-B method for the assay of antimony in biological samples**

Abstract: From 1946 until a presently undetermined date, researchers from the Naval Medical Research Institute in Bethesda, MD, validated a modified rhodamine-B microchemical assay for antimony by comparison with measurements of radioactive antimony. One individual participated, and animal studies were done as well. The microchemical method proved satisfactory for urine, plasma, liver, and kidney samples having antimony concentrations greater than 0.5 microgram per gram. Further modifications were needed for analysis of red blood cells, whole blood, and spleen.

Documents: Authors: L. F. Hallman; J. C. Strane. Title: Radioactive Studies of Antimony Compounds Containing Radioactive Isotopes: Evaluation of the Rhodamine-B Method for the Assay of Antimony in Biological Samples. Document Type: Report. Date: 13 February 1946

Start Date	Number	Title
1946	**NMRI-13**	**Treatment of radiation sickness with adrenal cortical hormone (deoxycorticosterone acetate)**

Abstract: From 1946 to 1947, researchers from the Naval Medical Research Institute in Bethesda, MD, and the Veterans Administration Hospital in the Bronx, NY, evaluated deoxycorticosterone acetate (DCA) treatments for the symptoms of radiation sickness. One female and forty-nine male patients participated in the study. After radiation treatments for a variety of benign and

NAVY 1944–1974 (CONTINUED)

Naval Medical Research Institute, Bethesda, MD (continued)

malignant conditions, all patients exhibited nausea and/or vomiting. Only three failed to show a reduction in symptoms after DCA therapy.

Documents: Title: The Treatment of Radiation Sickness with Adrenal Cortical Hormone (Deoxycorticosterone Acetate). Journal: [Unknown], vol. 61, issue 3. Document Type: Journal Article. Date: March 1949

Start Date	Number	Title
1950	**NMRI-07**	**Study of radiogallium as a diagnostic agent in bone tumors**

(For abstract and documentation, see Naval Hospital, Bethesda, MD.)

Start Date	Number	Title
1952	**NMRI-05**	**Absorption of x-rays by tissue of head and neck**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1960	**NNMC-087**	**Use of total-body radiation in the treatment of far-advanced malignancies**

(For further information, see Chapter 2—"Total-Body and Partial-Body Irradiation Studies.")

Start Date	Number	Title
1960	**NNMC-088**	**Taurine excretion in humans treated by total-body radiation**

(For abstract and documentation, see National Naval Medical Center, Bethesda, MD.)

Start Date	Number	Title
Unknown	**NMRI-08**	**Urinary excretion of gallium**

(For abstract and documentation, see Naval Hospital, Bethesda, MD.)

Start Date	Number	Title
Unknown	**NMRI-11**	**Body fluids in hypertension and mild heart failure**

(For abstract and documentation, see Naval Hospital, Bethesda, MD.)

NAVY 1944–1974 (CONTINUED)

Naval Medical Research Institute, Bethesda, MD (continued)

Start Date	Number	Title
Unknown	**NMRI-14**	**Clinical study of radiation sickness**

Abstract: From 1952 until a presently undetermined date, researchers from the Veterans Administration Hospital in the Bronx, NY, and from the Naval Medical Research Institute in Bethesda, MD, studied radiation sickness resulting from irradiation therapy for a number of diseases, including cancer. During a seventeen-month period, 254 patients receiving deep roentgen therapy participated. Radiation exposures and results of this study are unavailable at this time.

Documents: Authors: Friedrich Ellinger, M.D.; Bernard Roswit, M.D.; Joseph Sorrentino, M.D. Title: A Clinical Study of Radiation Sickness; Evaluation of Etiological Factors Influencing Incidence and Severity. Journal: *American Journal Roentgenology and Radiation Therapy*, vol. 68, issue 2. Document Type: Journal Article. Date: August 1952

Start Date	Number	Title
Unknown	**NNMC-091**	**Therapeutic trials of radiogallium (Ga-72)**

(For abstract and documentation, see National Naval Medical Center, Bethesda, MD.)

Naval Medical Research Unit 2, Taipei, Taiwan

Start Date	Number	Title
1965	**NRDL-08**	**Changes in total body sodium and body water during acute cholera and during maintenance therapy**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1971	**NMRU2-04**	**Abnormalities of physiology of copper in Wilson's disease: the whole-body turnover of copper**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1972	**NMRU2-09**	**Cesium-137 turnover rates in human subjects of different ages**

(For abstract and documentation, see National Tsing Hua University, Hsinchu, Taiwan.)

NAVY 1944–1974 (CONTINUED)

Naval Medical Research Unit 2, Taipei, Taiwan (continued)

Start Date	Number	Title
1974	**NMRU2-10**	**Body composition and starvation**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
Unknown	**NMRU2-01**	**Chromium-51 studies in Wilson's disease**

Abstract: From a presently undetermined date until 1968, researchers from the Naval Medical Research Unit 2 stationed in Taipei, Taiwan, investigated clinical characteristics of Wilson's disease. Five patients (from two families) with Wilson's disease and one heterozygous sibling with normal laboratory studies participated. Chromium-51 labeled red blood cells (RBCs) were used for RBC mass estimations and survival studies, and external-probe counts were conducted over the spleen and liver. Among the patients, blood volume was directly correlated with splenic size; RBC survival time was found to be inversely related to splenic size. Radioactivity detected in the spleen and liver was directly related to spleen size. Definite RBC sequestration in the spleen was not proven.

Documents: Title: Chromium-51 Studies in Wilson's Disease. Document Type: Event Profile. Date: 1994

Start Date	Number	Title
Unknown	**NMRU2-02**	**Copper absorption in Wilson's disease**

Abstract: From a presently undetermined date until 1970, researchers from the Naval Medical Research Unit 2 stationed in Taipei, Taiwan, examined copper absorption through the simultaneous administration of copper-64 orally and copper-67 intravenously. Thirty-three individuals participated in the study, including seven patients with Wilson's disease, eighteen members of their families, and five normal and three cirrhotic controls. Methods included examination of copper excretion in stool, copper retention, ratio of copper isotopes in plasma, and whole-body count isotope ratios. Thirty to sixty percent of administered copper is normally absorbed, and neither homozygotes or heterozygotes for Wilson's disease had increased absorption. The increased body stores of copper in Wilson's disease was attributed to reduced biliary excretion and not increased absorption.

Documents: Title: Copper Absorption in Wilson's Disease. Document Type: Event Profile. Date: 1994

Start Date	Number	Title
Unknown	**NMRU2-03**	**Muscle copper, zinc, and manganese levels in Wilson's disease: studies with use of neutron activation analysis**

(For abstract and documentation, see National Tsing Hua University, Hsinchu, Taiwan.)

NAVY 1944–1974 (CONTINUED)

Naval Medical Research Unit 2, Taipei, Taiwan (continued)

Start Date	Number	Title
Unknown	**NMRU2-05**	**Decreased calcium absorption (CaAb) on cholestyramine therapy**

Abstract: The inclusive dates for this study conducted by Bethesda Naval Hospital researchers at the Naval Medical Research Unit 2 stationed in Taipei, Taiwan, are presently undetermined. Researchers evaluated the effect of cholestyramine on calcium absorption. Calcium absorption was determined from the ratio of oral to intravenous fractional calcium-47 retention, which was measured by whole-body counting. A case report was presented from one patient with excessive calcium in the urine and recurrent calcium oxalate stones. Intermittent therapy with cholestyramine was for severe itching complicating chronic active hepatitis. Cholestyramine therapy in conventional doses was found to possibly alter calcium absorption.

Documents: Authors: S. M. Fidler; W. M. Beckner; J. Sode. Title: Decreased Calcium Absorption (CaAb) on Cholestyramine Therapy. Document Type: Abstract. Date: 1972 est.

Start Date	Number	Title
Unknown	**NMRU2-06**	**Hypersplenism in Wilson's disease**

Abstract: From a presently undetermined date until 1972, researchers from the U.S. Naval Medical Research Unit Number 2 stationed in Taipei, Taiwan, studied hematological abnormalities in Wilson's disease. Wilson's disease is a genetic defect of copper metabolism resulting in copper accumulations in the liver, brain, kidney, and other tissues. The disease is characterized by cirrhosis of the liver and brain degeneration. Thirteen patients with Wilson's disease were compared with seven patients with cirrohsis of the liver and thirteen normal controls. All of the participants were Chinese natives of Taiwan. Patients with Wilson's disease were eleven to forty-eight years old and included six males and seven females. The seven cirrhosis patients were all males ranging in age from forty to fifty-three years. In addition to routine hematological tests, iodine-125 labeled serum albumin dilution techniques were used to measure plasma volume. Red blood cells were labeled with chromium-51 (Cr-51), and external monitoring of the spleen disclosed any sequestration of labeled cells. Patients with Wilson's disease and patients with cirrhosis had lower hematocrits, white cell counts, and platelet counts than controls. These reductions were greatest in the patients with the largest spleens. Plasma volume and the body hematocrit/peripheral hematocrit ratios were significantly higher in patients with Wilson's disease and cirrhosis. Increased splenic sequestration of Cr-51 tagged red blood cells was not demonstrated in any participant. The hypersplenism in patients with Wilson's disease was similar to that found in patients with cirrhosis from other causes.

Documents: Authors: G. Thomas Strickland; N-K. Chankg; William M. Beckner. Title: Hypersplenism in Wilson's Disease. Journal: *Gut*, vol. 13, issue 3. Document Type: Journal Article. Date: March 1972

Title: Hypersplenism in Wilson's Disease. Document Type: Search Printout. Date: 1994

NAVY 1944–1974 (CONTINUED)

Naval Medical Research Unit 2, Taipei, Taiwan (continued)

Start Date	Number	Title
Unknown	**NMRU2-07**	**Turnover studies of copper and homozygotes and heterozygotes for Wilson's disease and controls: isotope tracer studies using copper-67 and copper-64**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
Unknown	**NMRU2-08**	**Clinical studies of Capillariasis philippinensis**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
Unknown	**NMRU2-11**	**Isotope studies in intestinal capillariasis**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
Unknown	**NMRU2-12**	**Iodine-131 studies in schistosomiasis**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
Unknown	**NMRU2-13**	**Intestinal capillariasis: new disease in man**

Abstract: From a presently undetermined date until 1969, researchers from the Naval Medical Research Unit 2, stationed in Taipei, Taiwan, and the San Lazaro Hospital in Manila, Philippines, characterized the clinical and pathophysiological features of intestinal capillariasis. Twenty-six people participated: eleven Filipino patients and fifteen asymptomatic relatives. Of the patients, nine were males between the ages of ten and fifty, and two were females aged thirty-three and seventy years. Asymptomatic relatives, selected as a control group, included fourteen males ranging in age from seventeen to sixty-two years. The only female control was twenty-three years old. Participants were studied at the hospital for six weeks and followed monthly as outpatients. This study was initiated following an epidemic of severe diarrhea and malabsorption resulting in the deaths of more than 100 people in

NAVY 1944–1974 (CONTINUED)

Naval Medical Research Unit 2, Taipei, Taiwan (continued)

the northern Philippines in 1967. From surveys associated with the epidemic and conducted before the study, the disease was documented as affecting males more frequently than females. For this study, mildly to severely affected patients with *Capillaria philippinensis* eggs in their stool were studied. *Capillaria philippinensis* was a newly discovered species of roundworm, the first *Capillaria* species to infect human intestine—and in epidemic proportions. Symptoms of infection included abdominal pain, diarrhea, muscle wasting, and edema, which often led to debility and death in two to four months. Clinical studies had shown the presence of a severe protein-losing intestinal disease (enteropathy) and malabsorption of fats and sugars. Testing during the diagnostic phase of this study was to determine whether protein loss was present. Intravenous injections of chromium-51 labeled albumin and testing of stool for radioactivity confirmed enteropathy. An effective treatment, consisting of fluid and electrolyte replacement and prolonged anthelminthic therapy with thiabendazole was identified as a result of the study.

Documents: Authors: G. E. Whalen et al. Title: Intestinal Capillariasis: A New Disease in Man. Journal: *The Lancet.* Document Type: Journal Article. Date: 4 January 1969

Start Date	Number	Title
Unknown	**NMRU2-14**	**Preliminary observations on a new disease in man—intestinal capillariasis**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
Unknown	**NMRU2-18**	**Tissue copper, zinc, and manganese levels in Wilson's disease: studies with the use of neutron activation analysis**

Abstract: From a presently undetermined date until June 1970, researchers at the Naval Medical Research Unit No. 2 in Taipei, Taiwan, studied tissue copper, zinc, and manganese levels in tissues obtained at autopsy from three patients with Wilson's disease. Copper, zinc, and manganese levels were determined by neutron activation analysis. Investigators compared the mean copper concentration in tissues of individuals who had Wilson's disease to those who had died from other causes. Tissues from the latter two served as controls. The mean copper concentration in the brain and liver of the three patients with Wilson's disease was nine to thirty times greater than that of the two controls. The copper concentration in tissue studied from two patients who had received penicillamine therapy for twelve to fourteen months was only slightly higher than the values from the controls. The one patient who did not receive penicillamine therapy had marked elevations in copper concentration in all tissues studied. Zinc and manganese tissue concentrations did not differ appreciably between patients and controls. These data suggested that penicillamine therapy results in a reduction of the tissue copper as follows: 1) most rapidly from the kidney, 2) more slowly from the liver and other selected tissues in this study, and 3) slowest from the central nervous system. The very high concentration of splenic and muscle copper in the untreated patient suggested that the patient was supersaturated with copper.

Documents: Authors: M. L. Leu; G. T. Strickland; S. J. Yeh. Title: Tissue Copper, Zinc, and Manganese Levels in Wilson's Disease: Studies with the Use of Neutron Activation Analysis. Document Type: Report. Date: March 1971

NAVY 1944–1974 (CONTINUED)

Naval Medical Research Unit 3, Cairo, Egypt

Start Date	Number	Title
1954	**NMRU3-27**	**Needle biopsy of the lung**

Abstract: From 1954 to 1956, researchers from the Naval Medical Research Unit 3 stationed in Cairo, Egypt, assessed the use of a specific type of needle when removing tumor tissue for biopsy. The Vin Silverman needle was compared with standard aspiration techniques for tissue biopsy. Thirteen male patients with cancer of various kinds participated in this study. X-rays were used to identify the position of the lesion before biopsy. Results of the study are not available at this time.

Documents: Title: Needle Biopsy of the Lung. Document Type: Event Profile. Date: 1994

Start Date	Number	Title
1960	**NMRU3-33**	**Studies on the mechanism of anemia in parasitic diseases**

Abstract: From 1960 until 1965 researchers from the Naval Medical Research Unit 3 Cairo, Egypt and Vanderbilt University School of Medicine in Nashville, TN, examined the mechanism of anemia in parasitic diseases. This study had four objectives: 1) to evaluate iron absorption, loss, and metabolism in various parasitic diseases; 2) to evaluate red cell and plasma volumes, red cell life span, blood proteins and blood loss in the same patients; 3) to evaluate changes in these parameters subsequent to specific anti-parasite or iron therapy; and 4) to provided a basis for planning effective methods for prevention and therapy of anemia associated with parasitic disease. To date no information is available on the number of participants. Adult male patients ranging in age from fifteen to thirty-five years with hookworm and hypochromic microcytic anemia were included in the study. Another group of controls was selected who had no evidence of disease, no anemia and no evidence of iron depletion. Initially, a sample of each patient's blood was tagged with chromium-51 (Cr-51) and a red cell volume and plasma volume measured. Following the Cr-51 study, each patient received tracer doses of iron-59 orally to measure iron absorption. Simultaneously, samples of blood were taken at appropriate intervals to measure plasma iron disappearance time, plasma iron turnover, iron utilization, and iron turnover in red blood cells. This study showed a relationship between the severity of anemia and magnitude of the hookworm infestation as quantified by the number of parasites expelled after administration of an effective vermifuge.

Documents: From: C. B. Galloway, Rear Admiral, Medical Corps, US Navy, Director, Research Division To: William J. Darby. Subject: Comments and proposed changes regarding study on the mechanism of anemia in parasitic diseases. Document Type: Letter. Document Date: 04 December 1959

Authors: William J. Darby, Professor of Biochemistry. Title: Studies on the mechanism of anemia in parasitic diseases. Document Type: Proposal. Document Date: 1960 est

Authors: William J. Darby; William N. Pearson. Title: Final report to Office of Naval Research: A program of research on problems of malnutrition in the Middle East and Africa. Document Type: Report. Document Date: 10 January 1965

Start Date	Number	Title
1965	**NMRU3-20**	**Chromium red cell half-life in severe iron deficiency anemia**

Abstract: In 1965, researchers from the Naval Medical Research Unit 3 stationed in Cairo, Egypt, along with investigators at Vanderbilt University School of Medicine in Nashville, TN, studied anemia in

NAVY 1944–1974 (CONTINUED)

Naval Medical Research Unit 3, Cairo, Egypt (continued)

Ancylostoma duodenale parasitic infections. Twenty-seven Egyptian patients participated. Chromium-51 labeled red blood cells were used to measure red cell survival. Radiation exposures and results of this study are unavailable at this time.

Documents: Title: Chromium Red Cell Half-Life in Severe Iron Deficiency Anemia. Document Type: Event Profile. Date: 1994

Start Date	Number	Title
1965	**NMRU3-23**	**Blood loss in pure *Ancylostoma duodenale* infection in Egyptian farmers**

Abstract: In 1965, researchers from the Naval Medical Research Unit 3 stationed in Cairo, Egypt, with investigators from Vanderbilt University School of Medicine in Nashville, TN, studied blood and iron losses accompanying *Ancylostoma duodenale* parasitic infections. Twelve Egyptian patients participated. The objectives were to correlate egg count, worm load, blood and iron loss, and degree of anemia. Chromium-51 labeled red blood cells were used to measure blood loss. Results of this study are unavailable at this time

Documents: Title: Blood Loss in Pure Ancylostoma Duodenale Infection in Egyptian Farmers. Document Type: Event Profile. Date: 1994

Start Date	Number	Title
1966	**NMRU3-30**	**Blood loss in Egyptian farmers infected with Ancylostoma duodenale**

Abstract: In 1966, researchers from the Naval Medical Research Unit 3 stationed in Cairo, Egypt, studied blood loss accompanying *Ancylostoma duodenale* parasitic infections. Twelve Egyptian patients participated. Red blood cells were collected from the patients, radiolabeled with chromium-51 according to standard clinical methods, and reinjected. Blood and stool samples were collected over a four day period and measured for radioactivity. Results of this study are unavailable at this time.

Documents: Title: Blood Loss in Egyptian Farmers Infected with Ancylostoma Duodenale. Document Type: Event Profile. Date: 1994

Start Date	Number	Title
1967	**NMRU3-12**	**Urinary schistosomiasis: a 5-year clinical, radiological, and functional evaluation**

Abstract: From 1967 to 1971, researchers from the Naval Medical Research Unit 3 stationed in Cairo, Egypt, studied urinary schistosomiasis. The study involved ten male Egyptian patients between the ages of nine and twenty-nine infected with *Schistosoma haematobium.* Urograms were conducted during treatment. Patients were followed for a five-year period before and after antischistosomial treatments. Results of this study are unavailable at this time.

Documents: Title: Urinary Schistosomiasis: A 5-Year Clinical, Radiological, and Functional Evaluation. Document Type: Event Profile. Date: 1994

NAVY 1944–1974 (CONTINUED)

Naval Medical Research Unit 3, Cairo, Egypt (continued)

Start Date	Number	Title
1967	**NMRU3-19**	**Blood loss in chronic *Schistosoma mansoni* infection in Egyptian farmers**

Abstract: In 1968, researchers from the Naval Medical Research Unit 3 stationed in Cairo, Egypt, along with investigators at Kasr-el-Aini Hospital assessed blood loss accompanying schistosomial infections. Seven Egyptian patients infected with *Schistosoma haematobium* participated in this study. Chromium-51 labeled red blood cells were used to measure gastrointestinal blood loss in patients with colonic and rectal polyps due to schistosomiasis.

Documents: Title: Blood Loss in Chronic Schistosoma Mansoni Infection in Egyptian Farmers. Document Type: Event Profile. Date: 1994

Start Date	Number	Title
1967	**NMRU3-22**	**Symptomatic, radiological, and functional improvement following treatment of urinary schistosomiasis in Egypt**

(For abstract and documentation, see Ain Shams University, Cairo, Egypt.)

Start Date	Number	Title
1968	**NMRU3-18**	**Urinary blood loss in Schistosoma haematobium infection in Egyptian farmers**

(For abstract and documentation, see Kasr-el-Aini Hospital, Cairo, Egypt.)

Start Date	Number	Title
1969	**NMRU3-10**	**Some effects of louse-borne relapsing fever on the function of the heart**

(For abstract and documentation, see Ahmadu Bello University, Zaria, Nigeria.)

Start Date	Number	Title
1969	**NMRU3-17**	**Histological and lymphangiographic studies in patients with clinical lepromatous leprosy**

(For abstract and documentation, see Ministry of Health, United Arab Republic.)

Start Date	Number	Title
1971	**NMRU3-02**	**Urinary schistosomiasis in Egypt: further radiological correlations**

Abstract: From 1971 to 1973, researchers from the Naval Medical Research Unit 3 stationed in Cairo, Egypt, investigated the causes and frequency of urinary schistosomiasis. A radiological survey of visible lesions with obstructed urinary bladders due to parasitic infection was conducted. One

NAVY 1944–1974 (CONTINUED)

Naval Medical Research Unit 3, Cairo, Egypt (continued)

hundred fifty-three male Egyptian patient urograms were reviewed. Radiation exposures and results of this study are not available at this time.

Documents: Authors: S. W. Young; Z. Ferid; B. Bassily; N. A. El Masry. Title: Urinary Schistosomiasis in Egypt: Further Radiological Correlations. Document Type: Report. Date: 28 February 1973

Title: Medline Express Printout: Urinary Schistosomiasis in Egypt: Further Radiological Correlations. Document Type: Search Printout. Date: 1994

Start Date	Number	Title
1971	**NMRU3-11**	**Colonic calcification and polyposis in schistosomiasis**

Abstract: In 1971, researchers from the Naval Medical Research Unit 3 stationed in Cairo, Egypt, examined gastrointestinal disorders caused by parasitic infections. A single male Egyptian patient participated. This study describes clinical and radiological features of a case of mixed infection with *Schistosoma mansoni* and *Schistosoma haematobium*. Exposure to radiation was incidental to participation in this study. Results of this study are not available at this time.

Documents: Title: Colonic Calcification and Polyposis in Schistosomiasis. Document Type: Event Profile. Date: 1994

Start Date	Number	Title
1971	**NMRU3-21**	**Hydroenphosis, bacteriuria, and maximal urine concentration in urinary schistosomisasis**

Abstract: From 1971 until a presently undetermined date, researchers at the Naval Medical Research Unit 3 stationed in Cairo, Egypt, studied kidney function in *Schistosoma haematobium* infections. Eighty-four male Egyptian patients participated. Conventional intravenous urography was done on all patients. Radiation exposures and results of this study are not available at this time.

Documents: Title: Hydroenphosis, Bacteriuria, and Maximal Urine Concentration in Urinary Schistosomisasis. Document Type: Event Profile. Date: 1994

Start Date	Number	Title
1972	**NMRU3-07**	**Acute haemolysis with ambilhar treatment in glucose-6-phosphate dehydrogenase deficiency**

Abstract: In 1972, researchers from the Naval Medical Research Unit 3 stationed in Cairo, Egypt, investigated the loss of red blood cells during drug therapy for schistosomal infections. Two male Egyptian patients with schistosomiasis participated. This was a clinical study of the survival of chromium-51 labeled red blood cells. Radiation exposures and results of this study are not available at this time.

Documents: Title: Acute Haemolysis with Ambilhar Treatment in Glucose-6-Phosphate Dehydrogenase Deficiency. Document Type: Event Profile. Date: 1994

NAVY 1944–1974 (CONTINUED)

Naval Medical Research Unit 3, Cairo, Egypt (continued)

Start Date	Number	Title
1972	**NMRU3-08**	**Changes in hepatic blood flow and blood volume after splenectomy for bilharzial hepatosplenic fibrosis dehydrogenase deficiency**

(For abstract and documentation, see Ain Shams University, Cairo, Egypt.)

Start Date	Number	Title
1973	**NMRU3-04**	**Radioactive renography in schistosomal obstructive uropathy**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
1973	**NMRU3-32**	**Urinary schistosomiasis in Egypt: clinical, radiological, bacteriological, and parasitological correlations**

Abstract: In 1973, researchers from the Naval Medical Research Unit 3 stationed in Cairo, Egypt, characterized urinary schistosomal infections. Two hundred male Egyptian patients with parasitic schistosomiasis affecting the urinary tract participated. Excretory urography using 50 percent diatrizoate sodium was done to assess the extent of urinary tract involvement. Results of this study are not available at this time.

Documents: Title: Urinary Schistosomiasis in Egypt: Clinical, Radiological, Bacteriological, and Parasitological Correlations. Document Type: Event Profile. Date: 1994

Start Date	Number	Title
Unknown	**NMRU3-06**	**Schistosomiasis of the liver: clinical, pathological and laboratory studies in Egyptian cases**

(For abstract and documentation, see Cairo University Hospital, Cairo, Egypt.)

Start Date	Number	Title
Unknown	**NMRU3-13**	**Treatment of chronic urinary Salmonella carriers**

(For abstract and documentation, see Abbassia Fever Hospital, Cairo, Egypt.)

Start Date	Number	Title
Unknown	**NMRU3-14**	**Intestinal protein loss in schistosomal polyposis of colon**

(For abstract and documentation, see Kasr-el-Aini Hospital, Cairo, Egypt.)

NAVY 1944–1974 (CONTINUED)

Naval Medical Research Unit 3, Cairo, Egypt (continued)

Start Date	Number	Title
Unknown	**NMRU3-15**	**Chronic urinary Salmonella carriers with intermittent bacteraemia**

(For abstract and documentation, see Abbassia Fever Hospital, Cairo, Egypt.)

Start Date	Number	Title
Unknown	**NMRU3-16**	**Urinary schistosomiasis treated with niridazole (Ambilhar): quantitative evaluation**

(For abstract and documentation, see Abbassia Fever Hospital, Cairo, Egypt.)

Start Date	Number	Title
Unknown	**NMRU3-28**	**Diagnosis and management of hepatic abcess of amebic origin**

Abstract: From a presently undetermined date until 1955, researchers from the Naval Medical Research Unit 3 stationed in Cairo, Egypt, used fluoroscopy with diagnostically difficult cases of amebic abscesses in the liver. Three male patients participated. Results of the study are unavailable at this time.

Documents: Title: Diagnosis and Management of Hepatic Abcess of Amebic Origin. Document Type: Event Profile. Date: 1994

Start Date	Number	Title
Unknown	**NMRU3-29**	**Observations of the natural history of amebiasis: preliminary report**

Abstract: From a presently undetermined date until 1955, researchers from the Naval Medical Research Unit 3 stationed in Cairo, Egypt, investigated accurate methods for diagnosing amebiasis. Thirteen asymptomatic male patients and thirteen matched controls participated in this study for twenty-three weeks. Routine chest x-rays were taken at the beginning and end of the study, and fluoroscopy was done on all participants at the end of the study. Results of the study are unavailable at this time.

Documents: Title: Observations of the Natural History of Amebiasis: Preliminary Report. Document Type: Event Profile. Date: 1994

Start Date	Number	Title
Unknown	**NMRU3-31**	**Iron loss and reabsorption in Ancylostoma duodenale infection and bilharzial colonic polyposis**

Abstract: From a presently undetermined date until 1970, researchers from the Naval Medical Research Unit 3 stationed in Cairo, Egypt, investigated iron loss and reabsorption in the gastrointestinal tract during parasitic infection and treatment. Seven male Egyptian patients with *Ancylostoma duodenale* infections and schistosomal colon polyps participated. Sodium chromate-chromium-51 (containing the radioisotope chromium-51) was used to label red blood cells according to

NAVY 1944–1974 (CONTINUED)

Naval Medical Research Unit 3, Cairo, Egypt (continued)

standard clinical methods. Blood and stool samples were collected over a four day period and measured for radioactivity. Results of this study are not available at this time.

Documents: Title: Iron Loss and Reabsorption in Ancylostoma Duodenale Infection and Bilharzial Colonic Polyposis. Document Type: Event Profile. Date: 1994

Naval Radiological Defense Laboratory, Hunters Point, CA

Start Date	Number	Title
1951	**NHOAK-045**	**Clinical studies with radioactive iron**

(For abstract and documentation, see Naval Hospital, Oakland, CA.)

Start Date	Number	Title
1951	**NHOAK-046**	**The effect of radiation on antibody production in the human**

(For abstract and documentation, see Naval Hospital, Oakland, CA.)

Start Date	Number	Title
1951	**NHOAK-047**	**A study of the use and effects of I-131 in patients with thyroid carcinoma**

(For abstract and documentation, see Naval Hospital, Oakland, CA.)

Start Date	Number	Title
1951	**NHOAK-048**	**The effect of radiation on plasma phopholipids in humans**

(For abstract and documentation, see Naval Hospital, Oakland, CA.)

Naval Radiological Defense Laboratory, San Francisco, CA

Start Date	Number	Title
1948	**NRDL-01**	**Observations on the thermal fragility of erythrocytes**

Abstract: From 1948 to 1950, researchers from the Naval Radiological Defense Laboratory in San Francisco, CA, examined the effects of temperature on red blood cells (RBCs) and the correlation between RBC fragility and red cell count. Nineteen research participants provided RBCs for study. Guinea-pig, rabbit, and rat RBCs were also studied. Human RBCs were the least heat sensitive. Results suggested that a relationship existed between heat sensitivity of

NAVY 1944–1974 (CONTINUED)

Naval Radiological Defense Laboratory, San Francisco, CA (continued)

RBCs and their susceptibility to in vivo destruction. Radiation environments were not specified in the available documents.

Documents: Authors: Leontine Goldschmidt; Robert L. Rosenthal. Title: Study #NRDL-01: Observations on the Thermal Fragility of Erythrocytes. Document Type: Report. Date: 24 November 1950

Start Date	Number	Title
1955	**NRDL-04**	**Some aspects of recent findings pertaining to the body composition of athletes, obese individuals and patients**

Abstract: From 1955 to 1958, researchers from the Naval Radiological Defense Laboratory in San Francisco, CA, analyzed the body composition of thirty-two participants. Participants included patients, weight lifters, and healthy individuals with an average physique. Groups were composed of both men and women. Procedures included determination of whole-body density and the use of radionuclide dilution techniques. Results of the study compared each type of participant on body fat content, body density, total body water, exchangeable sodium, chloride, and potassium in the body.

Documents: Authors: A. R. Behnke; W. L. Taylor. Title: Some Aspects of Recent Findings Pertaining to the Body Composition of Athletes, Obese Individuals and Patients. Document Type: Report. Date: 30 June 1959

Start Date	Number	Title
1956	**NRDL-03**	**Protecting and cleaning hands contaminated by synthetic fallout under field conditions**

(For abstract and documentation, see Camp Stoneman, CA.)

Start Date	Number	Title
1958	**NRDL-07**	**Some factors influencing beta-dosage of troops**

Abstract: From 1958 to 1959, researchers from the Naval Radiological Defense Laboratory in San Francisco, CA, examined contamination from synthetic fallout under simulated combat conditions. Researchers were interested in studying the conditions under which combat troop exposure to fallout might result in beta radiation-induced skin lesions. Ninety-three active duty military combat personnel crawled across a test area covered with synthetic fallout containing lanthanum-140 (La-140) as a tracer. Contamination was measured at sixteen body locations. Soil loading from fallout and exposure to La-140 were considered in determining contact beta dose. Sources contributing to total beta exposure were soil (from fallout), clothing, and skin contamination. Results showed that clothing contained five times the contaminant found on skin.

Documents: Author: W. J. Friedman. Title: Radiological Safety Report; Operation Stoneman II [Study #NRDL-07: Some Factors Influencing the Beta-Dosage of Troops]. Document Type: Report. Date: 1 May 1959

NAVY 1944–1974 (CONTINUED)

Naval Radiological Defense Laboratory, San Francisco, CA (continued)

Author: R. H. Black. Title: Stoneman II Test of Reclamation Performance; Volume V; Some Contaminability Characteristics of Personnel Exposed to Contact Beta Radiation. Document Type: Report. Date: 1959 est.

Author: R. H. Black. Title: Some Factors Influencing the Beta-Dosage to Troops. Journal: *Health Physics*, vol. 8. Document Type: Journal Article. Date: 1962

Start Date	Number	Title
1958	**NRDL-09**	**Improved plastic well scintillators for beta counting**

Abstract: From 1958 to 1959, researchers from the Naval Radiobiological Defense Laboratory in San Francisco, CA, analyzed plastic well scintillators as detectors for beta counting, described their use and characteristics, and determined their application in measuring radioactive potassium (K-42) in urine samples. Before this study, exchangeable potassium was assessed by measuring K-42 in urine or serum samples taken during the twenty-four-hour period after tracer administration (fifty microcuries of K-42). Shortly before the study was conducted, it was found that, to ensure optimum accuracy, samples should be collected for a forty-hour period to measure exchangeable potassium in sick patients. One individual participated in this study. Urine samples were collected for more than forty hours after the injection of K-42. Results showed that plastic well scintillators achieved a tenfold increase in counter sensitivity.

Documents: Author: E. A. Boling. Title: Improved Plastic Well Scintillators for Beta Counting. Journal: *International Journal of Applied Radiation and Isotopes*, vol. 5. Document Type: Journal Article. Date: 1959

Start Date	Number	Title
Unknown	**NRDL-02**	**Decontamination of synthetic radioactive fallout from intact human skin**

Abstract: From a presently undetermined date until 1956, researchers from the Naval Radiological Defense Laboratory, Health Physics Division, in San Francisco, CA, researched methods of personnel decontamination. Forty-five research participants evaluated various items, including a multi-head shower for field decontamination. Radiation exposures and results of this study are unavailable at this time.

Documents: From: A. L. Baietti. To: J. J. Fitzgerald. Subject: [summary of early findings for: decontamination of synthetic radioactive fallout from intact human skin]. Document Type: Letter. Date: 6 November 1956

Start Date	Number	Title
Unknown	**NRDL-05**	**Total exchangeable potassium and chloride and total body water in healthy men of varying water and fat content**

Abstract: From a presently undetermined date until 1959, researchers from the Naval Radiological Defense Laboratory in San Francisco, CA, developed techniques for analyzing body composition. Techniques were developed to measure total body fat, water, and sodium, potassium, and chloride electrolytes. Knowledge of proportions of potassium and chloride in

NAVY 1944–1974 (CONTINUED)

Naval Radiological Defense Laboratory, San Francisco, CA (continued)

relation to total body water and fat were to serve as baseline indicators for comparison with accepted standards of the day. Deviations from standard values could be related to disease or developmental abnormalities. Total red cell mass, basal oxygen consumption, cardiac output, and other parameters were thought to be related to the active red cell mass as determined by body water and electrolyte content. Thirty-seven healthy males, of varying fat and water content from lean to obese, participated. Intravenous injections were made of the following tracers: fifty microcuries of potassium-42 (K- 42), 5 microcuries of bromine-82 (Br-82), and 1 millicurie of hydrogen-3 (H-3 as tritiated water). The total dose per individual was less than 0.2 rad. Urine was collected from each participant during the entire forty-hour experiment. Results showed a marked correlation between amounts of exchangeable potassium or chloride and body water. Exchangeable chloride decreased in proportion to the relative amount of body fat.

Documents: Authors: E. A. Boling; W. L. Taylor; C. Entenman; A. R. Behnke. Title: Total Exchangeable Potassium and Chloride and Total Body Water in Healthy Men of Varying Water and Fat Content. Document Type: Report; Memorandum. Date: 4 May 1959

Start Date	Number	Title
Unknown	**NRDL-06**	**Rapid assay procedures for tritium labeled water in body fluids**

Abstract: From a presently undetermined date until 1959, researchers from the Naval Radiological Defense Laboratory in San Francisco, CA, developed an analytical technique for tritium as a tracer for exchangeable body water. There was considerable interest at the time in replacing deuterium oxide as the standard tracer. This study was part of a larger project developing methods of determining body composition. Two methods were tested: rapid vacuum sublimation and simplified internal standardization. Research participants were twelve healthy individuals. Calculation of body water was partly based on the ratio of total radioactivity injected minus an amount of radioactivity excreted. Rapid vacuum sublimation was preferred for accuracy, simplicity, and time. Simplified internal standardization gave results of similar accuracy, provided the water content of the original sample was known.

Documents: Authors: B. A. Vaughn; E. A. Boling. Title: Rapid Assay Procedures for Tritium Labeled Water in Body Fluids. Document Type: Report. Date: 28 December 1959

Naval Regional Medical Center, Oakland, CA

Start Date	Number	Title
1974	**NHOAK-007**	**Early determination of the incidence and healing of aseptic necrosis of femoral head following trauma utilizing radioisotope scan**

At the time of publication, there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

NAVY 1944–1974 (CONTINUED)

Naval Regional Medical Center, Oakland, CA (continued)

Start Date	Number	Title
Unknown	**NHOAK-013**	**NCOF 3L91 Liver**

Abstract: The inclusive dates for this study conducted at the Naval Regional Medical Center in Oakland, CA, are presently undetermined. Researchers proposed to compare intra-arterial chemotherapy plus hepatic radiation to intravenous chemotherapy plus hepatic radiation to hepatic radiation alone. Response rates, survival data, response duration, and toxicity of each therapy were to be examined. The protocol called for patients between the ages of sixteen and seventy five with inoperable liver cancer alone or confirmed cancer of any origin with liver disease. Radiation doses within the treatment series, results of this study, and the number of participants are not available at this time.

Documents: Title: Excerpt Relating to Study NHOAK-13: NCOF 3L91 Liver. Document Type: Protocol. Date: Unknown

Start Date	Number	Title
Unknown	**NHOAK-021**	**Scintigraphic arthrography using 99m-technetium sulfur colloid**

Abstract: The inclusive dates for this study conducted at the Naval Regional Medical Center in Oakland, CA, are presently undetermined. Researchers investigated the usefulness of technetium-99m (Tc-99m) sulfur colloid injections into joints for diagnostic procedures after arthroplasty. Following the traditional workup with plain x-rays and nuclear scans, Tc-99m was injected into the joint after the standard aspiration and contrast arthrogram. Eighteen female and six male patients participated in the study, and twenty-six arthrograms were taken. Results of this study are not available at this time.

Documents: Title: Progress Summary Relating to Study NHOAK-21: Scintigraphic Arthrography Using 99m-Technetium Sulfur Colloid. Document Type: Report. Date: Unknown

Naval Regional Medical Center, Philadelphia, PA

Start Date	Number	Title
1972	**NHPHIL-006**	**Use of cephalothin peritoneal irrigation in appendicitis**

(For abstract and documentation, see Naval Hospital, Philadelphia, PA.)

Naval Submarine Medical Research Laboratory, Groton, CT

Start Date	Number	Title
Unknown	**NHCHEL-023**	**Effects of hyperbaric exposure on human platelets**

(For abstract and documentation, see Naval Blood Research Laboratory, Chelsea, MA.)

NAVY 1944–1974 (CONTINUED)

New York Hospital-Cornell Medical Center, New York, NY

Start Date	Number	Title
1955	**ONR-22**	**The physiologic effects of hypometabolism upon cardiovascular dynamics in patients with cardiac insufficiency**

Abstract: In 1955, researchers at the New York Hospital and Cornell Medical Center in New York, NY, proposed to study the physiologic effects of hypometabolism upon cardiovascular dynamics. The purpose of the study was to explore the physiological, hemodynamic, metabolic, and clinical effects of radioiodine-induced hypometabolism in patients with intractable congestive heart failure. The proposal called for at least twenty patients in order to complete the series. Complete hemodynamic evaluation, using the methods of cardiac catheterization and its accessory techniques, was to be performed before therapy and again following the induction of hypometabolism. The clinical studies and the clinical response of the patient to treatment with iodine-131 were to be correlated with the physiologic data resulting from the comprehensive studies. Results for this study are currently unavailable.

Documents: Author: Daniel S. Lukas, M.D. Title: The Physiologic Effects of Hypometabolism upon Cardiovascular Dynamics in Patients with Cardiac Insufficiency. Document Type: Proposal. Date: 1955 est.

Northwestern University, Evanston, IL

Start Date	Number	Title
Unknown	**ONR-34**	**The study of hemorrhagic tendencies of irradiated subjects**

At the time of publication there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Ohio State University, Columbus, OH

Start Date	Number	Title
1948	**ONR-36**	**Radio-autographs**

At the time of publication there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

NAVY 1944–1974 (CONTINUED)

Ohio State University Research Foundation, Columbus, OH

Start Date	Number	Title
Unknown	**ONR-19**	**Research on the production of clinical roentgenograms by means of compact radioactive x-ray and gamma-ray sources**

At the time of publication there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Start Date	Number	Title
Unknown	**ONR-46**	**Research on the production of clinical roentgenograms by means of compact radioactive x-ray and gamma-ray sources**

At the time of publication there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Peter Bent Brigham Hospital, Boston, MA

Start Date	Number	Title
1949	**ONR-03**	**Persistence and utilization of maternal iron for blood formation during infancy**

(For abstract and documentation, see Boston Lying-In Hospital, Boston, MA.)

Presbyterian Medical Center, San Francisco, CA

Start Date	Number	Title
1963	**ONR-29**	**Clinical studies on the use of PVP preserved blood**

At the time of publication there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Radioactivity Center, Massachusetts Institute of Technology, Cambridge, MA

Start Date	Number	Title
1949	**ONR-03**	**Persistence and utilization of maternal iron for blood formation during infancy**

(For abstract and documentation, see Boston Lying-In Hospital, Cambridge, MA.)

NAVY 1944–1974 (CONTINUED)

Research Laboratory, Linde Company, Division of Union Carbide

Start Date	Number	Title
Unknown	**ONR-15**	**Research on procedures for the low-temperature preservation of blood**

Abstract: The dates for this research program conducted by investigators from the Linde Company of Union Carbide, the VA Hospital in Buffalo, NY, and the Roswell Park Memorial Institute in Buffalo, NY, are presently undetermined. Researchers sought to develop a red blood cell preparation that could be infused without post-thaw processing and a simple post-thaw separation procedure for use in whole blood and red cell suspension preservation and transfusion. The program combined a variety of both rabbit and human in vitro and in vivo studies to evaluate a process that involved the removal of a portion of plasma from whole blood and replacement of the plasma with the same volume of protective additive. Protective additives included polyvinlypyrrolidone (PVP) and Haemaccel. The total number of study participants is not available at this time. One study involved chromium-51 tagging for the measurement of circulating red cell volumes of three human donors. Two donors were known to be polycythemic. Donors were also tagged with iron-59 (twenty to forty microcuries as ferrous citrate) by intravenous injection. Blood samples were drawn daily for eight to ten days following injection, and from the radioactivities of the blood specimens, the percentage of the injected radioactivity that had been incorporated into the red cells was calculated. Final results of the program are not available at this time.

Documents:

Author: A. P. Rinfret. Title: Bimonthly Report No. 2 Research on Procedures for the Low-Temperature Preservation of Blood. Document Type: Report. Date: 1 May 1963

Author: A. P. Rinfret. Title: Bimonthly Report No. 3 Research on Procedures for the Low-Temperature Preservation of Blood. Document Type: Report. Date: 1 July 1963

Author: A. P. Rinfret. Title: Bimonthly Report No. 4 Research on Procedures for the Low-Temperature Preservation of Blood. Document Type: Report. Date: 1 August 1963

Author: A. P. Rinfret. Title: Bimonthly Report No. 5 Development of Procedures for the Low-Temperature Preservation of Blood. Document Type: Report. Date: 1 November 1963

Roswell Park Memorial Institute, Buffalo, NY

Start Date	Number	Title
Unknown	**ONR-15**	**Research on procedures for the low-temperature preservation of blood**

(For abstract and documentation, see Research Laboratory, Linde Company, Division of Union Carbide.)

St. Clare's Hospital, New York, NY

Start Date	Number	Title
1969	**NMRU3-17**	**Histological and lymphangiographic studies in patients with clinical lepromatous leprosy**

(For abstract and documentation, see Ministry of Health, United Arab Republic.)

NAVY 1944–1974 (CONTINUED)

St. Paul's Hospital, Addis Ababa, Ethiopia

Start Date	Number	Title
1969	**NMRU3-10**	**Some effects of louse-borne relapsing fever on the function of the heart**

(For abstract and documentation, see Ahmadu Bello University, Zaria, Nigeria.)

San Francisco Children's Hospital, San Francisco, CA

Start Date	Number	Title
1963	**ONR-29**	**Clinical studies on the use of PVP preserved blood**

(For abstract and documentation, see Presbyterian Medical Center, San Francisco, CA.)

San Lazaro Hospital, Manila, Philippines

Start Date	Number	Title
Unknown	**NMRU2-13**	**Intestinal capillariasis: new disease in man**

(For abstract and documentation, see Naval Medical Research Unit 2, Taipei, Taiwan.)

Strong Memorial Hospital, University of Rochester, Rochester, NY

Start Date	Number	Title
1946	**ONR-14**	**Immunologic studies on red blood cells**

At the time of publication there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Submarine Development Group ONE, San Diego, CA

Start Date	Number	Title
1972	**SMRL-04**	**Longitudinal health study: a multiphasic medical surveillance program for U.S. Navy submarine and diving personnel**

Abstract: From 1972 until a presently undetermined date, researchers at the Naval Submarine Medical Research Laboratory in New London, CT, began a long-term surveillance program designed to

NAVY 1944–1974 (CONTINUED)

Submarine Development Group ONE, San Diego, CA

analyze health parameters among submarine and diving personnel occupationally exposed to unique environmental stresses. More than 600 Navy personnel volunteered for the project. Participants came from one of three groups: submarine personnel attached to the Fleet Ballistic Missile ships of Submarine Group TWO, New London, CT; diving personnel attached to the Escape Training Tank in Groton, CT; and diving students commencing saturation training at Submarine Development Group ONE, San Diego, CA. Traditional as well as specialized health data was collected. Anticipated and unanticipated biological effects of unique environmental stresses were to be identified with the goal of controlling them. The results of the study are unavailable at this time.

Documents: Author: Lt. Comdr. William A. Tansey, MC, USNR. Title: Longitudinal Health Study: A Multiphasic Medical Surveillance Program for US Navy Submarine and Diving Personnel. Document Type: Report. Date: 31 May 1974

Title: Document Control Data—R & D. Document Type: Abstract. Date: 31 May 1974

Submarine Medical Research Laboratory, New London, CT

Start Date	Number	Title
1961	**SMRL-05**	**Method for improving accuracy of air particulate activity measurements**

Abstract: From 1961 to 1962, researchers from the Naval Submarine Medical Research Laboratory in New London, CT, measured the air particulate radioactivity in nuclear-powered submarines to confirm adequacy of engineering and radiation controls. Four members of the Blue Crew of a nuclear-powered submarine, the USS *Robert E. Lee* (SSBN-601), received whole-body counts to establish their background levels of radiation before exposure to radioactivity or nuclear reactors. They were similarly tested after participating in a sixty-day patrol on board a nuclear submarine. Air particulate activity under normal operating conditions was well within the prescribed conservative limits for protection against beta radiation. This study also provided tentative evidence that long-lived gamma activity retained within the body does not result from association with naval nuclear power plants but rather from general slight increases in background from nuclear fallout.

Documents: Author: Lt. Clement H. Darby, MC, USN. Title: Method for Improving Accuracy of Air Particulate Activity Measurements. Document Type: Report. Date: 4 October 1962

Start Date	Number	Title
1972	**SMRL-04**	**Longitudinal health study: a multiphasic medical surveillance program for U.S. Navy submarine and diving personnel**

(For abstract and documentation, see Submarine Development Group ONE, San Diego, CA.)

NAVY 1944–1974 (CONTINUED)

Submarine Medical Research Laboratory, New London, CT (continued)

Start Date	Number	Title
Unknown	**SMRL-01**	**Aerotitis media in submariners**

(For further information, see Chapter 3—"Nasopharyngeal Irradiation Therapy.")

Documents: Authors: Lt. Henry L. Haines, MCS, USNR; Lt. J. Donald Harris, H(S), USNR. Title: Aerotitus Media in Submariners, Interval Report No. 1 on Bureau of Medicine and Surgery Research Division Project X-434 (Sub No. 90); Aerotitis Media Among Submariners—Prevention and Treatment, Secton A. Document Type: Report. Date: 18 February 1946

Start Date	Number	Title
Unknown	**SMRL-02**	**Radium therapy in aerotitis media**

(For further information see Chapter 3—"Nasopharyngeal Irradiation Therapy.")

Thyroid Clinic of Massachusetts Hospital, Boston, MA

Start Date	Number	Title
1948	**ONR-04**	**Effect of total thyroidectomy on function of metastatic thyroid cancer**

(For abstract and documentation, see Massachusetts Institute of Technology, Cambridge, MA.)

Tulane University, New Orleans, LA

Start Date	Number	Title
1947	**ONR-40**	**Mass spectrometer development and application**

At the time of publication there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Tulane University School of Medicine, New Orleans, LA

Start Date	Number	Title
1963	**ONR-27**	**Urology and renal physiology**

Abstract: From 1963 to 1965, researchers from the Tulane University School of Medicine in New Orleans, LA, studied alterations in renograms and renal photoscans of patients who had undergone renal transplantation. The study reported the course of treatment for two male patients and two female

NAVY 1944–1974 (CONTINUED)

Tulane University School of Medicine, New Orleans, LA (continued)

patients who had each received chimpanzee kidneys after having been in terminal renal failure. Three patients died by the sixty-second day after transplant, and one by nine months. Serial renograms and renal photoscans using sodium iodohippurate iodine-131 (radiohippuran) were performed during the postoperative period in each patient. For the renograms, radiohippuran was given as a single intravenous dose of one microcurie per each five kilograms of body weight. For the renal photoscans, a priming dose of 100 microcuries was given, followed at times by a constant intravenous infusion of 300 microcuries over a forty-five minute period. Alterations in the radiohippuran renograms and renal photoscans were thought to have been related to intrarenal edema, denoting rejection. Researchers felt that identification of alterations by these methods was of significant diagnostic and prognostic value.

Documents: Author: J. U. Schlegel, M.D. Title: Therapeutic Application of Renal Physiology. Journal: *The Journal of the Arkansas Medical Society,* vol. 59, no. 9. Document Type: Journal Article. Date: February 1963

Author: J. U. Schlegel, M.D. Title: Urology and Renal Physiology. Journal: *The Journal of the Louisiana State Medical Society,* vol. 115, no. 12. Document Type: Journal Article. Date: December 1963

Authors: Jack E. Mobley, M.D.; J. U. Schlegel, M.D. Title: Radiohippuran Accumulation in the Transplanted Kidney as a Signal of Rejection. Journal: *Surgery,* vol. 58, no. 5. Document Type: Journal Article. Date: November 1965

Start Date	Number	Title
Unknown	**ONR-32**	**Investigation of protein synthesis by use of the isotope N-15**

At the time of publication there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

University Hospitals of Cleveland, Cleveland, OH

Start Date	Number	Title
1953	**ONR-43**	**The use of the artificial kidney in human patients**

Abstract: From January 1953 until December 1953, researchers from the University Hospitals of Cleveland proposed to study further application and evaluation of the Skeggs-Leonard artificial kidney. This unit was the only one that permitted the withdrawal of fairly large quantities of water from patients, while at the same time removing nitrogenous waste products and restoring to normal the electrolyte pattern. Techniques using radioactive iodinated albumin, sodium-24, bromide-82, and antipyrine were to be used to measure body fluid compartments in anuric patients. By these techniques plus direct tissue analysis, as well as analysis of the dialyzate, the researchers intended to determine the alterations resulting from anuria and the effect of the artificial kidney in correcting these abnormalities. Anuric animals were also to be studied and treated by different techniques to help evaluate the results observed in the patients. To date, no information is available on the number of participants.

Documents: Title: The Use of Artificial Kidney in Human Patients. Document Type: Abstract. Date: 1953 est.

NAVY 1944–1974 (CONTINUED)

University of California, Berkeley, CA

Start Date	Number	Title
1947	**NHOAK-044**	**The pathological physiology of the liver**

(For abstract and documentation, see Naval Hospital, Oakland, CA.)

University of California, San Diego, CA

Start Date	Number	Title
Unknown	**NMCSD-270**	**Intracranial arterial occulusion in children: diagnosis and follow-up by brain scanning**

Abstract: The inclusive dates for this study conducted at the Naval Medical Center and University of California in San Diego, CA, are presently undetermined. The case histories of two children with complete left side paralysis are discussed. Sodium pertechnate technitium-99m was used for brain imaging to find areas of brain infarction. Exposure to radiation was incidental to participation in this study. Results of this study are not available at this time.

Documents: Authors: Sheldon Hurwitz, M.D. et al. Title: Intracranial Arterial Occlusion in Children: Diagnosis and Follow Up by Brain Scanning. Journal: *American Journal of Diseases of Children*, vol. 126, issue 3. Document Type: Journal Article. Date: September 1973

Title: Medline Express Printout: Intracranial Arterial Occlusion in Children: Diagnosis and Follow Up by Brain Scanning. Document Type: Abstract; Search Printout. Date: 1994

University of California, San Francisco Medical Center, San Francisco, CA

Start Date	Number	Title
Unknown	**ONR-28**	**An evaluation of rapid weight reduction in obesity; body composition during therapy in diabetes mellitus**

(For abstract and documentation, see Naval Hospital, Oakland, CA.)

University of Copenhagen, Denmark

Start Date	Number	Title
Unknown	**NNMC-139**	**Autoradiographic and histopathological studies of thorium dioxide patients**

(For abstract and documentation, see National Naval Medical Center, Bethesda, MD.)

NAVY 1944–1974 (CONTINUED)

University of Copenhagen, Denmark (continued)

Start Date	Number	Title
Unknown	**NNMC-143**	**Investigation of late clinical findings following Thorotrast (thorium dioxide) administration**

(For abstract and documentation, see National Naval Medical Center, Bethesda, MD.)

University of North Carolina, Chapel Hill, NC

Start Date	Number	Title
1948	**ONR-37**	**Blood flow volume in kidney and liver**

Abstract: From June 1948 until November 1950, researchers at the University of North Carolina, Chapel Hill, NC, studied measured the flow of blood in the kidney and liver using radioisotopic procedures in unanesthetized humans. The work included animal experiments to determine the optimum concentration of radioactive materials for counting and experiments involving unanesthetized dogs to compare the findings of the first group of studies and outline the conditions and procedures that should be used on humans. To date, no information is available on the number of participants.

Documents: Title: Blood Flow Volume in Kidney and Liver. Document Type: Abstract. Date: 1950 est.

University of San Francisco, San Francisco, CA

Start Date	Number	Title
1947	**NHOAK-044**	**The pathological physiology of the liver**

(For abstract and documentation, see Naval Hospital, Oakland, CA.)

University of Southern California, Los Angeles, CA

Start Date	Number	Title
1955	**ONR-21**	**A study of the prevalence and severity of thyroid deficiency on young and mature adult males**

Abstract: In February 1955, researchers at the University of Southern California, Los Angeles, CA, proposed to study thyroid deficiency. The purpose of the study was to investigate the prevalence of thyroid deficiency and the general incidence of hypothyroidism in young and mature adult males. Participants were to include college students, medical school students, hospital employees, and young veterans. Former determinations were made with the basal metabolic rate test, which had been found to conceal hypothyroidism. Hypothyroidism was recognized as a

NAVY 1944–1974 (CONTINUED)

University of Southern California, Los Angeles, CA (continued)

prime cause of mental sluggishness, poor memory, fatigability, feeble response to stress, and prolonged production of vascular and parenchymatous degeneration. Hypothyroidism had not been recognized in routine physical examinations but was completely correctable with treatment. The pathogenic mechanism of the hypothyroid state was to be analyzed when possible by radioactive iodine and thyrotropic hormone tests. The associated systemic pathology was also to be determined and studies carried out to determine the possible causal relationship between the hypothyroid state and the pathology found. Results for this study are currently unavailable.

Documents: Author: Paul Starr, M.D. Title: Application for Research Grant for a Study of the Prevalence and Severity of Thyroid Deficiency in Young and Mature Adult Males. Document Type: Proposal. Date: 10 February 1955

University of Utah, Salt Lake City, UT

Start Date	Number	Title
Unknown	**NNMC-139**	**Autoradiographic and histopathological studies of thorium dioxide patients**

(For abstract and documentation, see National Naval Medical Center, Bethesda, MD.)

Start Date	Number	Title
Unknown	**NNMC-143**	**Investigation of late clinical findings following Thorotrast (thorium dioxide) administration**

(For abstract and documentation, see National Naval Medical Center, Bethesda, MD.)

Unknown

Start Date	Number	Title
1951	**ONR-30**	**The study of the plasma substitute, Dextran**

At the time of publication there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

USS *Robert E. Lee* (SSBN-601)

Start Date	Number	Title
1961	**SMRL-05**	**Method for improving accuracy of air particulate activity measurements**

(For abstract and documentation, see Submarine Medical Research Laboratory, New London, CT.)

NAVY 1944–1974 (CONTINUED)

Veterans Administration Hospital, Buffalo, NY

Start Date	Number	Title
Unknown	**ONR-15**	**Research on procedures for the low-temperature preservation of blood**

(For abstract and documentation, see Research Laboratory, Linde Company, Division of Union Carbide.)

Vanderbilt University School of Medicine, Nashville, TN

Start Date	Number	Title
1960	**NMRU3-33**	**Studies on the mechanism of anemia in parasitic diseases**

(For abstract and documentation see Naval Medical Research Unit 3, Cairo, Egypt.)

Start Date	Number	Title
1965	**NMRU3-20**	**Chromium red cell half-life in severe iron deficiency anemia**

(For abstract and documentation, see Naval Medical Research Unit 3, Cairo, Egypt.)

Start Date	Number	Title
1965	**NMRU3-23**	**Blood loss in pure Ancylostoma duodenale infection in Egyptian farmers**

(For abstract and documentation, see Naval Medical Research Unit 3, Cairo, Egypt.)

Veterans Administration Hospital, Bronx, NY

Start Date	Number	Title
1946	**NMRI-13**	**Treatment of radiation sickness with adrenal cortical hormone (deoxycorticosterone acetate)**

(For abstract and documentation, see Naval Medical Research Institute, Bethesda, MD.)

Start Date	Number	Title
Unknown	**NMRI-14**	**Clinical study of radiation sickness**

(For abstract and documentation, see Naval Medical Research Institute, Bethesda, MD.)

NAVY 1944–1974 (CONTINUED)

Wake Forrest University, Winston-Salem, NC

Start Date	Number	Title
1948	**ONR-31**	**Distribution and turnover of sodium and potassium in acute infections**

At the time of publication there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

Yale University School of Medicine, New Haven, CT

Start Date	Number	Title
1956	**ONR-20**	**Endocrine interrelations in man's metabolic response to trauma**

At the time of publication there was insufficient information available to construct an abstract on this event. Additional information is being sought. If information is obtained, this event, complete with abstract, will be published in Volume 2 of this report.

1975-1994 Human Radiation Experiments, Projects, Studies as Reported by the Services and DoD Organizations

Air Force 1975-1994

Air Force Institute of Technology, Wright-Patterson AFB, Dayton, OH

Start Date	Number	Title
1976	AF0039	Radiation dose to humans from 99m technetium labeled dihydrothiotic acid

Brooke Army Medical Center, Fort Sam Houston, TX

Start Date	Number	Title
1993	CID0062	Randomized phase III study of CODE plus thoracic irradiation versus alternating CAV and EP for extensive stage small cell lung cancer

David Grant Medical Center, Travis AFB, CA

Start Date	Number	Title
1975	AF0004	Indium-111 DTPA for cisternography
1977	60MG043	Phase III study comparing Adriamycin against Adriamycin + Cytoxan as initial therapy of unresectable non-oat-cell lung cancer to be followed by radiotherapy and additional chemotherapy in responding patients (n cal og 2n63 - SG 760)
1977	60MG131	Phase III study of radiotherapy plus BCNU; radiotherapy plus metronidazole and BCNU; and radiotherapy plus procarbazine, CCNU & vincristine (NCOG 6G61 - SG 815)
1977	60MG154	Treatment of adult acute non-lymphocytic leukemia (ANLL): A randomized phase II-III study of cytarabine and daunorubicin vs. CCNU and cyclophosphamide for remission maintenance of ANLL (NCOG 9L61 - SG 824)
1977	60MG050	Combined modality phase III study for patients with first recurrence of breast cancer (NCOG 1B62 - SG 816)
1977	60MG051	Phase III study evaluating the role of postoperative radiotherapy after curative resection surgery in lung cancer (excluding small cell undifferentiated lesions) (NCOG 2N62 - SG# 766)
1977	60MG052	Phase III trial of two combination chemotherapy regimens (VAM vs POCC) in combination with radiotherapy for undifferentiated small cell anaplastic lung cancer (NCOG 2O61 - SG 765)

AIR FORCE 1975-1994 (CONTINUED)

David Grant Medical Center, Travis AFB, CA (continued)

Start Date	Number	Title
1977	60MG053	Randomized cross over study of total body irradiation (TBI) and combination chemotherapy in non-Hodgkin's lymphoma (excluding chronic lymphocytic leukemia and histiocytic lymphoma) (SG 828)
1977	60MG074	Comprehensive therapy for all stages of ovarian cancer (NCOG 5601-5 - SG 829)
1977	60MG130	Phase III study comparing Adriamycin plus 5-FU vs BCNU plus Adriamycin plus Ftorafur for patients with disseminated pancreatic cancer - and - A phase III study comparing Adriamycin + 5-FU vs BCNU + Adriamycin + Ftorafur vs mitomycin C + Adriamycin +...
1977	60MG136	Randomized two step study for treatment of metastatic carcinoma of the breast with combination chemotherapy (SG 821)
1978	60MG153	Treatment of advanced or recurrent adenocarcinoma, anaplastic (large cell), and anaplastic (non-oat cell) carcinoma of the lung with Corynebacterium parvum and Cytoxan vs procarbazine plus 5-FU or Ftorafur plus Baker's antifol (WCG-175 - SG 846)
1978	60MG138	Radiation therapy vs radiation therapy and chemotherapy (vincristine, chloroethylnitrosourea, prednisone, and procarbazine) for the treatment of medulloblastoma and ependymoma (CCG-942 - SG 964)
1978	60MG152	Treatment of resected lung cancer with immunotherapy using Corynebacterium parvum (WCG-200 - SG 845)
1978	60MG155	Treatment of newly diagnosed acute lymphoblastic leukemia for patients with "average risk" prognostic characteristics (CCG-162 - SG 79-61)
1979	60MG073	Conventional radiotherapy and heavy charged particle radiotherapy in the treatment of local and regional adenocarcinoma of the pancreas (NCOG 3p81 - SG 79-112)
1979	60MG099	Intergroup Hodgkin's disease study - comparison of involved field radiotherapy with involved field radiotherapy plus adjuvant chemotherapy (MOPP) and extended field radiotherapy in the treatment of stage I and II Hodgkin's disease in children
1979	60MG156	Treatment of newly diagnosed acute lymphoblastic leukemia for patients with "high risk" prognostic characteristics (CCG-163 - SG 79-2)
1979	60MG109	Ovarian tumors, primary and metastatic (CCG-861 - SG 79-5)

AIR FORCE 1975-1994 (CONTINUED)

David Grant Medical Center, Travis AFB, CA (continued)

Start Date	Number	Title
1979	60MG054	Randomized phase III study of radiation therapy with or without chemotherapy for remission induction and multi-drug chemotherapy program for remission consolidation and maintenance in inoperable advanced squamous cell carcinoma of the head and neck
1980	60MG105	Nation Wilms' tumor study III (ccg-491 - SG# 80-72)
1980	60MG107	Non-randomized study using high-dose methotrexate with citrovorum and hexamethylmelamine for recurrent ovarian cancer (SGO# 82-075)
1981	60MG016	Phase I-II study to determine the activity of the combination of m-AMSA, prednisone, and chlorambucil (APC) in patients with metastatic breast carcinoma who have failed prior Adriamycin-containing chemotherapy regimens (NCOG 1b92x - SG 81-006)
1981	60MG023	Phase II study of platinum, Adriamycin, and cyclophosphamide (PAC) chemotherapy in the treament of ovarian and endometrial carcinoma (NCOG 5o81- SG 81-010)
1981	60MG024	Phase II study of m-AMSA in metastatic or recurrent carcinoma of the lung (NCOG 2n83 - SG 81-021)
1981	60MG033	Phase III study of combined external hepatic irradiation and chemotherapy examining routes of administration for metastatic and primary liver carcinoma (NCOG 3l91 - SG 81-004)
1981	60MG020	Phase II study of 5-FU + CCNU before radiotherapy - hu-misonidazole followed by alternating courses of procarbazine-vincristine, BCNU-5-FU for the treatment of primary malignant brain tumors (NGOG 6g91x - SG 81-005)
1981	60MG128	Phase III trial on 99m-Tc EHIDA biliary examination (SG 81-061)
1981	60MG071	Comparative gastroplasty study and long-term effect of serum cholesterol, triglycerides and lipoproteins (SG 81-064)
1981	60MG037	Phase III study of the role of misonidazole or cis-platinum with preoperative radiotherapy for local control of bladder carcinoma and the role of cis-platinum for the control of distant metastases (NCOG 4b82 - SGO 81-020)
1981	60MG139	Testicular cancer intergroup study (NCOG 4t83jx - SG 81-014)
1981	60MG064	Chemotherapy of advanced ovarian cancer: Adriamycin-cyclophosphamide versus platinum-Adriamycin-cyclophosphamide (NCOG 5o91x - SG 81-017)

AIR FORCE 1975-1994 (CONTINUED)

David Grant Medical Center, Travis AFB, CA (continued)

Start Date	Number	Title
1981	60MG061	Analog intravenous angiography (SG 81-110)
1981	60MG047	Randomized phase III study of platinum with bleomycin or methotrexate for advanced squamous cell carcinoma of the head and neck with radiation therapy and salvage surgery (NCOG p7h01 - SG 81-059)
1981	60MG046	Randomized phase II study of irradiation, irradiation plus misonidazole, and irradiation plus BCNU for the treatment of metastasis to the brain (NCOG 6g81 - SG 81-019)
1981	60MG039	Phase III trial of seven-drug versus nine-drug chemotherapy regimens, in extensive disease, & late consolidation radiotherapy in limited disease, for undifferentiated small cell anaplastic lung cancer (oat cell), (NCOG 2o91 - G 81-013)
1981	60MG038	Phase III study to compare misonidazole combined with irradiation or radiation therapy alone in the treatment of locally advanced (stage III) non-oat cell lung cancer. (NCOG 2n01j - SG 81-018)
1982	60MG025	Phase II study to determine the effectiveness of medroxyprogesterone acetate (Provera) in refractory breast cancer in postmenopausal women (NCOG 1b-81-1 - SG 82-077)
1982	60MG019	Phase II study of 4'-epi-doxorubicin in the treatment of advanced lung cancer & evaluation of cardiotoxicity (NOCG 2n-81-1 - SG 82-119)
1982	60MG015	Phase I-II study of combination chemotherapy and sequential hemibody radiation therapy in the treatment of high tumor burden multiple myeloma (NCOG 9m91 - SG# 81-143)
1982	60MG030	Phase III study comparing Adriamycin + Ftorafur vs. radiation + Adriamycin + Ftorafur vs. mitomycin C + Ftorafur for patients with disseminated gastric cancer (NCOG 3s801j - SG 81-144)
1982	60MG032	Phase III study of combination chemotherapy with cis-platinum, bleomycin and vinblastine in advanced lung cancer (NCOG 2n-81-1 p [DGMC pilot study] - SG 82-081)
1982	60MG027	Phase III randomized study comparing effective, non-cross-resistant, alternating combinations (CMF, FOAM) with sequential use of the same combinations for metastatic breast cancer (NCOG 1b-80-1x - SG 82-003)
1983	60MG005	Clinical trial to assess tamoxifen in patients with primary breast cancer and negative axillary nodes whose tumors are positive for estrogen receptors (NSABP b-14 - SGO 83-091)

AIR FORCE 1975-1994 (CONTINUED)

David Grant Medical Center, Travis AFB, CA (continued)

Start Date	Number	Title
1983	60MG008	Clinical trial to compare PF with and without Adriamycin in the management of patients with primary breast cancer and positive axillary nodes whose tumors are negative for estrogen receptors and/or progesterone receptor (NSABP b-11-SGO 83-092)
1983	60MG007	Clinical trial to compare Alkeran + 5-fluorouracil + tamoxifen (PFT) with and without Adriamycin in management of patients with primary breast cancer and positive axillary nodes with tumors positive for estrogen receptors (NSABP b-12-SGO 83-093)
1983	60MG004	Clinical trial to assess sequential methotrexate - 5-fluorouracil in patients with primary breast cancer and negative axillary nodes whose tumors are negative for estrogen receptors (NSABP b-13 - SGO 83-090)
1983	60MG034	Phase III study of pelvic and abdominal radiotherapy vs cisplatin, Adriamycin, and cyclophosphamide chemotherapy in stage I, II, and optimal stage III epithelial carcinoma of the ovary (NCOG 5o-82-1 - SGO 83-076)
1983	60MG022	Phase II study of parenteral L-PAM (arm b) vs misonidazole plus parenteral L-PAM (arm c) in the treament of advanced lung cancer (NCOG 2n-81-1 arms b&c - SGO 83-148)
1983	60MG029	Phase III randomized trial of single agent 5-FU vs high-dose folinic acid + 5-FU vs methotrexate + 5-FU + folinic acid in patients with disseminated measurable large bowel cancer (NCOG 3c-83-1 - SGO 83-153)
1983	60MG143	Treatment of acute lymphoblastic leukemia with lymphomatous characteristics (lymphoma-leukemia) (CCG-123 - SGO 83-174)
1983	60MG111	Phase I-II study of radiotherapy plus BUDR and procarbazine, CCNU, vincrisitine (PCV) for the treatment of primary malignant brain tumors (NCOG 6g-2-1 - SG 83-075)
1983	60MG114	Phase II trial of Adriamycin and methotrexate in patients with endocrine unresponsive prostatic cancer (NCOG 4p-82-2 - SGO 83-155)
1983	60MG123	Phase III study of continuous infusion FUDR: Intravenous versus intra-arterial in patients with colon cancer metastatic to liver only (NCOG 3l-82-1 - SGO 83-125)
1984	60MG124	Phase III study to determine the effect of combining chemotherapy with surgery and radiotherapy for resectable squamous cell carcinoma of the head and neck (RTOG 83-22 - SGO 84-094)
1984	60MG150	Treatment of newly diagnosed acute lymphoblastic leukemia in children with an intermediate prognosis (CCG-105 - SGO 83-176)

AIR FORCE 1975-1994 (CONTINUED)

David Grant Medical Center, Travis AFB, CA (continued)

Start Date	Number	Title
1984	60MG148	Treatment of newly diagnosed acute lymphoblastic leukemia in children with a poor prognosis excluding infants and patients with lymphoma-leukemia or Fab l3 blasts (CCG-106 - SGO 84-001)
1984	60MG127	Phase III trial of adjuvant whole abdomen irradiation for locally advanced adenocarcinoma of the proximal colon with lymph node metastases (RTOG 83-18 - SGO 84-029)
1984	60MG126	Phase III trial of adjuvant interferon following CVP chemotherapy in the management of adults with favorable non-Hodgkin's lymphomas (NCOG 8l-82-4 - SGO 84-083)
1984	60MG158	Phase III protocol to study whether addition of single dose hemi-body irradiation to standard fractionated local field irradiation is more effective than LCL field irradiation alone in treatment of symptomatic osseous metastases (RTOG 82-06/SG84094)
1984	60MG125	Phase III trial of 7-drug vs 3-drug chemotherapy regimens with or without prophylactic cranial irradiation (PCI) for undifferentiated small cell anaplastic lung cancer (oat cell): Extensive disease (NCOG 2o-83-1 - SGO 84-068)
1984	60MG101	Metastatic melanoma determination of optimal fraction size (RTOG 83-05 - SGO# 84-097)
1984	60MG070	Combined preoperative and postoperative radiation therapy of operable colorectal carcinoma (RTOG 81-15 - SGO 84-028)
1984	60MG045	Randomized phase I/II study to evaluate twice daily fractionation for locally advanced squamous, adenocarcinoma, and large cell carcinoma of lung (RTOG 83-11 - SGO 84-067)
1985	60MG017	Phase I/II pilot study to evaluate accelerated fractionation via concomitant boost for squamous, adeno, and large cell carcinoma of the lung (RTOG 84-07 - SGO 85-07)
1985	60MG113	Phase II study to evaluate the treatment of squamous cell & basaloid carcinoma of the anal canal by radiation therapy and chemotherapy for radiosensitization followed by biopsy +/- a-p resection (RTOG 83-14 - SGO 85-099)
1985	60MG100	Lymphoblastic lymphoma, disseminated, mediastinal, or bone with less than 25% lymphoblasts in the bone marrow (CCG-502 - SGO 85-010)

AIR FORCE 1975-1994 (CONTINUED)

David Grant Medical Center, Travis AFB, CA (continued)

Start Date	Number	Title
1985	60MG122	Phase III simultaneous cis-platinum and radiation therapy combined with standard radiation therapy in the treatment of unresectable squamous or undifferentiated carcinoma of the head and neck (RTOG 84-06- SGO 85-090)
1986	60MG001	3 arm clinical trial comparing short intensive Adriamycin-cyclophosphamide chemotherapy w/wo interval reinduction chemotherapy (CMF) to "conventional" CMF in positive-node patients having specific node and age criteria (NSABP B-15 - SWOG 86-022)
1986	60MG092	High-dose cisplatin in hypertonic saline in the treatment of advanced non-small cell lung cancer (NC0G 2n-84-2 - SGO 86-027)
1986	60MG134	Randomized phase II protocol: Hyperfractionated radiotherapy and BCNU for supratentorial malignant glioma (RTOG 83-02 - SG 84-096)
1986	60MG097	Intergroup rhabdomyosarcoma study - III (CCG-631 - SGO 85-144)
1987	60MG018	Phase I/II study of Fluosol-Da 20% in combination with doxorubicin in the treatment of metastatic carcinoma of the breast (ATC 87-11 - SGO 87-114)
1987	60MG133	Radiolabeled leukocytes in pyelonephritis: A clinical study (SGO 88-012)
1988	60MG026	Phase III comparison of CHOP versus m-BACOD versus ProMACE-CytaBOM versus MACOP-B in patients with intermediate high-grade non-Hodgkin's lymphoma (SWOG 8416- SGO 88-086)
1988	60MG010	Clinical trial to determine the worth of chemotherapy and tamoxifen over tamoxifen alone in the management of patients with primary invasive breast cancer, neg axillary nodes, and estrogen receptor pos tumors (NSABP b-20 - SGO 89-077)
1988	60MG036	Phase III study of subtotal lymphoid irradiation or total lymphoid irradiation versus involved field irradiation plus vinblastine, bleomycin, and methotrexate chemotherapy in favorable stage Hodgkin's disease (NCOG 8h-85-1 - SGO 88-100)
1988	60MG145	Treatment of extensive non-small cell lung cancer: Standard dose cisplatin vs high-dose cisplatin in hypertonic saline alone vs high-dose cisplatin/mitomycin C (SWOG 8738 - SG 89-029)
1988	60MG147	Treatment of localized non-Hodgkin's lymphoma: Comparison of chemotherapy (CHOP) to chemotherapy plus radiation therapy

AIR FORCE 1975-1994 (CONTINUED)

David Grant Medical Center, Travis AFB, CA (continued)

Start Date	Number	Title
1988	60MG121	Phase III randomized trial of combination therapy for multiple myeloma: (1) comparison of VMPC/VVBAP to VAD or VMCPP/VMBAPP for induction; (2) interferon or no therapy for maintenance; (3) interferon + dexamethasone for improvement (SWOG8624 - SG88-138)
1988	60MG095	Ifosfamide and mesna in malignant mesothelioma-phase II (SWOG 831 - SGO 88-159)
1988	60MG093	High-grade intracranial astrocytoma, previously untreated, located outside the brain stem or the spinal cord (CCG-945 - SGO 89-030)
1988	60MG086	Evaluation of amonafide in refractory multiple myeloma (SWOG 8726 - SG 89-028)
1989	60MG009	Clinical trial to compare sequential methotrexate 5-fluorouracil (M-F) with conventional CMF in primary breast cancer patients with negative nodes and estrogen receptor negative tumors (NSABP b-19 - SGO 90-076)
1989	60MG011	Clinical trial to determine the worth of tamoxifen and the worth of breast radiation in the management of patients with node-negative, clinically occult, invasive breast cancer treated with lumpectomy (NSABP b-21 - SGO89-248/7)
1989	60MG031	Phase III study of alpha interferon consolidation following intensive chemotherapy with ProMACE-MOPP (day 1-8) in patients with low grade malignant lymphomas (SWOG 8809 - SGO 89-127)
1989	60MG151	Treatment of newly diagnosed advanced Hodgkin's disease (CCG-521 - SGO 90-275)
1989	60MG096	Immobilization versus early mobilization in the treatment of ankle sprains: A randomized prospective trial (SGO 89-146)
1989	60MG088	Fine-needle aspiration of mammographically detected non-palpable breast lesions (SG 89-150)
1989	60MG085	Evaluation of ADR-529 as a cardioprotective agent in a randomized double-blind phase III trial of CAV + placebo vs CAV + ADR-529 in the treatment of extensive disease small cell lung cancer (Adria 088002-999 - SGO # 89-148)
1989	60MG082	Enalapril alone vs enalapril plus furosemide vs furosemide alone as first line therapy for congestive heart failure (SGO 90-030)
1989	60MG055	ADR-529 as a cardioprotective agent in a phase III randomized trial of FAC verses FAC + ADR-529 in the treatment of disseminated carcinoma of the breast (Adria 30,617 - SGO 89-147)

AIR FORCE 1975-1994 (CONTINUED)

David Grant Medical Center, Travis AFB, CA (continued)

Start Date	Number	Title
1989	60MG049	Unified trial to compare short intensive preoperative systemic Adriamycin cyclophosphamide therapy with similar therapy administered in conventional postoperative fashion (NSABP b-18 - SGO 89-075)
1989	60MG068	Clinical investigation of Tc-99m SQ 30217 in patients suspected of having coronary artery disease (Squibb 26,742-3 - SGO 88-066)
1989	60MG067	Clinical investigation of 99m-Tc-teboroxime (Squibb Diagnostics 26,742-6 - SGO 89-207)
1989	60MG066	Clinical trial to evaluate the effect of dose intensification and increased cumulative dose of postop Adriamycin-cyclophosphamide therapy on the disease free survival of patients with primary breast cancer and post axillary nodes (NSABP B-22-SGO-89-249)
1989	60MG146	Treatment of limited small cell lung cancer with concurrent chemotherapy, radiotherapy, with or without GM-CSF and subsequent randomization to maintenance interferon or no maintenance (SWOG 8812 - SGO 89-250)
1989	60MG042	Prospectively randomized trial of low-dose leucovorin plus 5-FU, high-dose leucovorin plus 5-FU, or observation following curative resection in selected patients with Duke's B or C colon cancer (SWOG 8899 - SGO 89-097)
1990	60MG012	Double-blind, randomized, parallel, placebo-controlled, multicenter study of the hemodynamic effects of felodipine ER in patients with heart failure (mk-218 - SGO 90-208)
1990	60MG048	Randomized prospective study of lumbar spinal fusions with and without transpedicular screw-plate fixation (SGO 90-291)
1990	60MG149	Treatment of newly diagnosed acute lymphoblastic leukemia in children with an intermediate prognosis (CCG 1891 - SGO 90-234 - 90-297)
1990	60MG058	Intergroup protocol for the treatment of childhood hepatoblastoma and hepatocellular carcinoma: A phase III groupwide study (CCG - 8881 - SGO 90-031)
1990	60MG157	Use of indium-111 labeled Myoscint (R) in ischemic heart disease (Centocor c00041-08 - SGO 90-0166)
1990	60MG098	Intergroup rhabdomyosarcoma study - IV. Pilot study for clinical group III disease (CCG-671 - SGO 90-163)

AIR FORCE 1975-1994 (CONTINUED)

David Grant Medical Center, Travis AFB, CA (continued)

Start Date	Number	Title
1990	60MG044	Randomized investigation of high-dose versus standard dose cytosine arabinoside with daunorubicin in patients with acute non-lymphocytic leukemia (SWOG 8600 - SGO 90-217)
1990	60MG060	Open-label, multicenter study to evaluate the 24-hour hemodynamic effects and plasma drug levels following a single dose of felodipine ER in patients with heart failure (Merck MK-218 - SGO 90-207)
1990	60MG115	Phase II/III study of fluorouracil (5-FU) and its modulation in advanced colorectal cancer (SWOG 89-05 - SGO 91-036)
1990	60MG077	Efficacy and safety of once daily nisoldipine coat-core 20mg, 30mg, and 60mg (2x30mg) tablets vs placebo in patients with stable exertional angina pectoris (Miles d90-015 - SGO 91-010a)
1990	60MG087	Evaluation of Cardiolite as an adjunct in conjunction with stress testing for the diagnosis of ischemic heart disease using a short time interval between rest and stress injections (Dupont 843-033 - SGO 90-237)
1990	60MG072	Compassionate use of ciproflaxcin intravenous in the treatment of a patient with an infection refractory to currently marketed antibiotics (Miles U88-003 - SGO 90-273)
1990	60MG117	Phase III clinical investigation of Prohance (TM) in patients suspected of having neurological pathology (Squibb 32,521-3 - SGO 90-130)
1991	60MG021	Phase II study of hyperfractionated radiotherapy for the treatment of primary brainstem tumors (78 Gy protocol) (BTRC 8725 - SGO 91-154)
1991	60MG028	Phase III randomized trial of combination therapy for multiple myeloma comparision of (1) VAD to VAD/verapamil/quinine for induction, with crossover for failures (2) interferon alpha-2b w/wo periodic DMCP for maintenance (SWOG 9028-SGO91-187/193)
1991	60MG062	Aredia (pamidronate disodium) comparative trial of Aredia versus placebo for the prevention of skeletal-related complications in patients with breast cancer and lytic bone lesions treated with chemotherapy (Ciba-Geigy 19 - SGO 91-140)
1991	60MG142	Effects of thionamides on the efficacy of radioiodine treatment in patients with Graves' disease
1991	60MG140	Effect of hyperbaric oxygen on reperfusion edema following revascularization of the critically ischemic lower extremity (SGO 91-098)

AIR FORCE 1975-1994 (CONTINUED)

David Grant Medical Center, Travis AFB, CA (continued)

Start Date	Number	Title
1991	60MG144	Treatment of children less than 21 years of age with newly diagnosed acute non-lymphocytic leukemia (ANLL) and myelodysplastic syndrome (MDS) (CCG 2891 - SGO 91-243/92-048)
1991	60MG063	Aredia (pamidronate disodium) comparative trial of Aredia versus placebo for the prevention of skeletal-related complications in patients with breast cancer and lytic bone lesions treated with hormonal therapy (Ciba-Geigy 18 - SGO 91-139)
1991	60MG103	Multicenter, double-blind, randomized, parallel, multiple-dose, placebo-controlled study of the hemodynamic and clinical effects of losartan (MK-954, DUP 753) in patients with heart failure (MK-954 047-11 - SGO 92-042)
1991	60MG078	Efficacy of fosinopril sodium in patients with chronic heart failure not receiving digoxin therapy (Bristol Myers Squibb 31,138-06 - SGO 91-105)
1991	60MG079	Emergency request for use of itraconazole for treatment of disseminated Porothrix schenck II infection for patient (name redacted) (SGO 91-215)
1991	60MG116	Phase III chemotherapy of disseminated advanced stage testicular cancer with cisplatin plus etoposide with either bleomycin or ifosfamide (SWOG 8997 - SGO 91-005)
1991	60MG089	Fludarabine emergency use request (SGO 92-043)
1991	60MG091	Gastrointestinal function following upper gastrointestinal surgery (SGO 91-216)
1991	60MG090	Fludarabine phosphate in patients with refractory chronic lymphocytic leukemia (NCI 189-0018 - SGO 91-194)
1991	60MG083	Enalaprilat enhanced renal scintigraphy in the diagnosis of renovascular hypertension (SGO 92-005)
1991	60MG059	Open label, multi-center clinical investigation to determine the safety and efficacy of Prohance (TM) in children suspected of having neurological pathology (Squibb Diagnostics 32,421-6 - SGO 91-134)
1991	60MG104	Multicenter, randomized double-blind, placebo-controlled, parallel, outpatient evaluation to determine the dose-response relationship of diltiazem mods 12-hour formulation when given in monotherapy for mild to moderate hypertn (mk-793 028-00 - SGO 92-009)
1991	60MG106	National Wilms' tumor study - 4: Therapeutic trial (CCSG 461 - SGO 91-173/92-037)

AIR FORCE 1975-1994 (CONTINUED)

David Grant Medical Center, Travis AFB, CA (continued)

Start Date	Number	Title
1991	60MG108	One year open label coat-core nisoldipine therapy (Miles d90-015 extension - SGO 91-010b)
1992	60MG014	Multicenter study to evaluate the efficacy and safety of the ESA (arbutamine) system when used in conjunction with radionuclide imaging to diagnose coronary artery disease (Gensia 0127 - SGO 92-212)
1992	60MG006	Clinical trial to assess the relative efficacy of 5-FU + leucovorin with or without inteferon alpha-2a in patients with Duke's B and C carcinoma of the colon
1992	60MG002	Clinical evaluation of temporomandibular joint arthrocentesis and arthroscopy for TMJ internal derangements (SGO 92-243)
1992	60MG003	Clinical trial to evaluate the worth of tamoxifen in conjunction with lumpectomy and breast irradiation for the treatment of noninvasive intraductal carcinoma (DCIS) of the breast (NSABP b-24 - SGO 92-064)
1992	60MG119	Phase III comparison of adjuvant chemotherapy with or without endocrine therapy in high-risk, node negative breast cancer patients, and a natural history follow-up study in low-risk node negative patients (SWOG 8897 - SGO 90-180)
1992	60MG094	Hyperbaric oxygen therapy in the treatment of better prognosis non-healing diabetic lower extremity lesions (SGO 91-007)
1992	60MG120	Phase III comparison of combination chemotherapy (CAF) and chemohormonal therapy (CAF + Zoladex or CAF + Zoladex and tamoxifen) in premonopausal women with axillary node-positive, receptor-positive breast cancer (SWOG 8851 - SGO 90-226)
1992	60MG118	Phase III comparison of adjuvant chemoendocrine therapy with CAF and concurrent or delayed tamoxifen to tamoxifen alone in postmenopausal patient with involved axillary lymph nodes and positive receptors (SWOG 8814 - SGO 90-095)
1992	60MG057	Intergroup protocol for the treatment of childhood hepatoblastoma and hepatocellular carcinoma: A phase III groupwide study (CCG 8881 - SGO 93-034)
1992	60MG132	Quantitative computed tomographic acquisition of a David Grant USAF Medical Center vertebral body bone density database (SGO 93-013)
1992	60MG135	Randomized study of standard chemotherapy vs STAMP V with ABMT in stage IV poor prognosis breast carcinoma, phase III (SWOG 9115 - SGO 93-042)

AIR FORCE 1975-1994 (CONTINUED)

David Grant Medical Center, Travis AFB, CA (continued)

Start Date	Number	Title
1992	60MG041	Prospective, randomized study of the utility of hyperbaric oxygen therapy in managment of non-healing wounds (SGO 92-123)
1992	60MG065	Clinical trial to evaluate the effect of dose intensification & increased cumulative dose of postop Adriamycin-cyclophosphamide therapy with G-CSF on disease-free survival and survival of patients with prim breast CA & pos ax nodes (NSABP B25-SOG92-209)
1993	60MG035	Phase III study of postoperative radiotherapy for single brain metastases (rtog 90-21 - SGO 93-146)
1993	60MG080	Emergency treatment request for use of cisapride suspension in the treatment of pediatric motility disorders for patient (name redacted) (SGO 93-175)
1993	60MG102	Multi-center investigator blinded study of the efficacy and safety of azithromycin vs ciprofloxacin in the treatment of acute bacterial exacerbations of chronic obstructive pulmonary disease (Premier Research I-0234 - SGO 93-217)
1993	60MG084	Evaluation of dexamethasone, etoposide, cisplatin, high-dose ara-C and L-asparaginase (DECAL) induct followed by inten maint chemotx with ifosfamide/ mesna and etoposide alt with DECAL for recur Hodgkin's and non-Hodgkin's lymphoma (CCG 5912 - SGO 93-236)
1993	60MG081	Emergency treatment request of glycogen storage disease type IB with RHUG-CSF (SGO 94-021)
1993	60MG129	Phase III trial to preserve the larynx: Induction chemotherapy and radiation therapy versus concomitant chemotherapy and radiation therapy versus radiation therapy (RTOG 91-11 - SGO 93-159)
1993	60MG076	Double-blind, placebo-controlled study of the efficacy and safety of three doses of CP-0127 and placebo in patients with presumed sepsis and the systemic inflammatory response syndrome (SIRS) (Cortech CP-0127-92-002 - SGO 93-080)
1993	60MG075	Dose intensification of methotrexate and 6-mercaptopurine for ALL in childhood (POG 9005 - SGO 94-059)
1993	60MG141	Effect of oral D-sotalol on mortality in patients with atherosclerotic coronary heart disease and left ventricular dysfunction (Bristol-Myers Squibb Pharmaceutical Research Institute cv102-023a - SGO 93-264)
1993	60MG069	Clinical study on scapho-lunate ligament reconstruction (SGO 94-016)

AIR FORCE 1975-1994 (CONTINUED)

David Grant Medical Center, Travis AFB, CA (continued)

Start Date	Number	Title
1993	60MG056	Amlodipine study of the angina population (ASAP): A double-blind randomized, placebo controlled study (Pfizer I-0232 - SGO 92-280)
1993	60MG137	Recombinant urokinase (rUK, Abbott-76120) versus operative intervention as initial therapy for acute lower-limb arterial occlusion (Abbott m92-859 - SGO 93-106)
1993	60MG040	Phase III trial of the use of long term total androgen suppression following neoadjuvant hormonal cytoreduction and radiotherapy in locally advanced carcinoma of the prostate (RTOG 92-02 - SGO 93-167)
1994	60MG013	Multicenter study to assess the Genesa system device market prototype (Gensia 0138 - SGO 94-091)

Dwight D. Eisenhower Army Medical Center, Fort Gordon, GA

Start Date	Number	Title
1993	CID0062	Randomized phase III study of CODE plus thoracic irradiation versus alternating CAV and EP for extensive stage small cell lung cancer

Keesler Medical Center, Keesler AFB, MS

Start Date	Number	Title
1976	81MG036	Peripheral resistance to thyroid hormone
1976	81MG006	Antacid vs placebo in duodenal ulcer disease
1978	81MG020	Acute leukemia in childhood 11, POG 7420/21
1978	81MG021	Follow up study on long-term remission in acute leukemia in children, phase III, POG 7422
1978	81MG019	Medulloblastoma and ependymoma, phase III, POG 7409
1978	81MG022	MOPP vs OPP in treatment of children with recurrent brain tumors, a phase III study, POG 7621
1979	81MG023	Comparison of involved field radiotherapy with adjuvant MOPP chemotherapy & extended field radiotherapy in the treatment of stage I & II Hodgkin's disease in children, phase III, POG 7660

AIR FORCE 1975-1994 (CONTINUED)

Keesler Medical Center, Keesler AFB, MS (continued)

Start Date	Number	Title
1979	81MG024	Evaluation of Adriamycin, vincristine sulfate, cyclophosphamide, prednisone, methotrexate, 6-mercaptopurine, hydrocortisone, and leucovorin in treatment of non-Hodgkin's lymphoma in children, phase III, POG 7905
1979	81MG003	Comparative study of the efficacy and tolerance of rosamicin and erythromycin in treatment of pneumonia due to Mycoplasma pneumonia
1980	81MG018	National Wilm's tumor study
1981	81MG025	Evaluation of treatment regimens in acute lymphoid leukemia (ALL) of childhood (ALinC 13), phase III, POG 8035/36
1982	81MG042	Study of thyroid carcinoma
1982	81MG044	Effects of two different lung positions in development of pneumothorax following fine needle lung aspiration
1983	81MG037	Treatment of limited small cell lung cancer with VP-6/cis-platinum, alternating with vincristine/Adriamycin/Cytoxan and radiation therapy vs concurrent VP-16/ vincristine/Adriamycin/Cytoxan and radiation, SWOG 8232
1983	81MG026	Multi-institutional controlled trial of adjuvant chemotherapy in the treatment of osteosarcoma, phase III, POG 8107
1984	81MG002	Prospective study of 'super predictors' in pulmonary function measures
1984	81MG009	Combined modality therapy for multiple myeloma: VMCP-VBAP for remission induction therapy: VMCP + levamisole vs sequential half-body radiotherapy + vincristine - prednisone for patients who fail to achieve remission status with chemotherapy alone
1985	81MG027	Emergency treatment of patient (minor's name) in a phase I study of hyperfractionation in brain stem gliomas in children, POG 8495
1985	81MG043	Terbutalline: Its role in the prevention of tubo-spasm during hysterosalpingography (HSG)
1987	81MG010	Emergency treatment request for an open labeled study of Asacol in the induction and/or maintenance of remission of inflammatory bowel disease to treat patient (name redacted)
1987	81MG034	Evaluation of systematic therapy for children with T-cell acute lymphatic leukemia, phase III, POG-7837

AIR FORCE 1975-1994 (CONTINUED)

Keesler Medical Center, Keesler AFB, MS (continued)

Start Date	Number	Title
1988	CID0058	Treatment of localized non-hodgkin's lymphoma: Comparison of chemotherapy (CHOP) to chemotherapy plus radiation therapy
1989	81MG041	Phase III protocol for surgical adjvant therapy for rectal carcinoma: A controlled evaluation of a) protracted infusion 5-fluorouracil as a radiation enhancer and b) 5-FU plus methyl-CCNU chemotherapy, SWOG protocol 8896
1990	81MG035	Intergroup rhabdomyosarcoma study - IV. Pilot study for clinical group IV disease, POG-8889
1990	81MG038	Cisplatin and novobiocin in the treatment of stage 4, stage 3b or locally recurrent tumor after radiation therapy of non-small cell lung cancer. A phase II pilot, SWOG 8850
1990	81MG046	Up front intensive 6-MP/methotrexate vs up front alternating chemotherapy for acute lymphocytic leukemia in childhood
1990	81MG045	Treatment of children with localized malignant germ cell tumors. A phase II study
1990	81MG017	Fludarabine phosphate in patients with refractory chronic lymphocytic leukemia, NCI 89-0018 - group C, protocol
1990	81MG014	Incidence of undiagnosed pathology in the anterior region of the oral cavity in recall patients screened with panoramic and bitewing radiographs
1990	81MG005	Activated vitamin D metabolites and osteopenic bone disease in anticonvulsant treated patients
1990	81MG029	ALinC 15 dose intensive of methotrexate and 6-mercaptopurine for acute lymphocytic leukemia (ALL) in children, POG 9005
1990	CID0035	Treatment of children with high stage medulloblastoma: Cisplatin/VP-16 pre- vs post-irradiation; a phase III study, POG 9031
1991	81MG039	Intergroup rectal adjuvant protocol, phase III study, SWOG 9040
1991	81MG011	Emergency use request for clinical investigation proposal, "Single patient protocol for the clinical evaluation of itraconazole (R51,211/CC) in the compassionate clearance treatment of systemic mycoses"
1991	81MG028	Study of biological behavior of optic pathway tumors, a phase II study, POG 8935

AIR FORCE 1975-1994 (CONTINUED)

Keesler Medical Center, Keesler AFB, MS (continued)

Start Date	Number	Title
1992	81MG001	Pilot study evaluation of multimodality treatment of local regional esophageal carcinoma, phase II
1992	81MG031	OPEC/OJEC chemotherapy for children older than 1 year of age with INSS stages 2B and 3 neuroblastoma, POG 9244
1992	81MG013	Phase III randomized study of surgery vs surgery plus adjunctive radiation therapy in intermediate risk endometrial adenocarcinoma, GOG 99
1992	81MG033	T-cell #4 "A" pilot (with PEG L-asparaginase), POG 9295
1993	81MG016	Clinical trial to assess the relative efficiency of 5-FU + leucovorin with or without interferon alpha-2a in patients with Dukes' B and C carcinoma, NASBP C-05
1993	81MG015	Interferon alpha-2a therapy for angiomatous disease
1993	81MG007	Clinical trial comparing short, intensive Adriamycin/Cytoxan +/- tamoxifen in node-negative breast cancer patients with ER-negative tumors: NSABP B-23
1993	81MG032	Phase II study of Taxol in children with recurrent/refractory soft tissue sarcoma, rhabdomyosarcoma, osteosarcoma, Ewing's sarcoma, neuroblastoma, germ cell tumors, Wilm's tumors, hepatoblastoma, and hepatocellular carcinoma, POG 9262
1994	81MG004	Prospective randomized comparison of combined modality therapy for carcinoma of the esophagus: Chemotherapy plus surgery vs surgery alone for patient with local regional disease, phase III - intergroup
1994	81MG040	Evaluation of topotecan in patients with recurrent or metastatic squamous cell carcinoma of head and neck, phase II, SWOG 9305

Lawrence Berkeley Laboratory, Berkeley, CA

Start Date	Number	Title
1979	60MG112	Phase II protocol of heavy charged particle radiotherapy for localized esophageal squamous cell carcinoma (NCOG 3e81 - SG 79-109)
1979	60MG110	Phase I-II protocol of heavy charged particle radiotherapy for locally advanced and/or recurrent cancers of multiple sites and types (NCOG 0r81 - SG 79-111)

AIR FORCE 1975-1994 (CONTINUED)

School of Aerospace Medicine, Brooks AFB, TX

Start Date	Number	Title
1975	AF0010	Thallium-201 myocardial imaging
1976	AF0068	Body fat: Its relationship to coronary artery disease, blood pressure, lipids, and other risk factors measured in a large male population
1977	AF0102	Small airways closure due to increased FIO2's and acceleration stress
1977	AF0101	Validation testing of decompression procedures for flying after diving at altitudes above sea level
1977	AF0053	Estimations of body composition by various methods: Tritium
1977	AF0100	Project Ranch Hand II: Health effects of herbicide exposure in Vietnam Air Force personnel
1978	AF0069	Treatment of hypertension in aviators: A clinical trial with Aldactazide
1978	AF0054	A nomogram to predict lean body mass in men
1980	AF0070	Computer-enhanced thallium scintigrams in asymptomatic men with abnormal exercise tests
1980	AF0030	Fluoroscopic coronary artery calcification and associated coronary artery disease in asymptomatic young men
1981	AF0055	Multigated thallium scans and radionuclide angiograms: Comparison in asymptomatic men
1982	AF0075	Cardiac fluoroscopy work unit 7755-27-12
1983	AF0056	Evaluation of asymptomatic male patients using the multi-gated acquisition method and first harmonic phase analysis
1986	AF0072	Accuracy of exercise thallium-201 myocardial imaging in asymptomatic young men

Walter Reed Army Hospital/Medical Center, Washington, DC

Start Date	Number	Title
1990	CID90-324	Double-blind evaluation of intermittent therapy with Transderm-Nitro versus placebo in the treatment of chronic stable angina

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX

Start Date	Number	Title
1975	CID0657	Myocardial infarction in young adults: Risk factors, clinical course, and functional impairment
1975	CID0651	Effectiveness of fibrinogen I-25 (human) in the detection of deep vein thrombosis
1975	CID0636	Grenz ray - its role in recalcitrant hand eczema
1975	CID0630	Natural history of euthyroid goiter
1975	CID0635	Immunological studies of human acute leukemia
1975	CIDI-82-75	Effect of lithium carbonate incubation on the candidacidal activity of human granulocytes
1975	CIDI-77-75	Effect of lithium carbonate (Li2CO3,LC) on in vitro phagocytic index (PI) of granulocytes (PMNS)
1975	AF0003	Effectiveness of fibrinogen I-125 (human) in detection of deep vein thrombosis
1976	CID0704	MMPI correlates of localized brain damage
1976	CID0711	Radiographic appearance of normal seminal vesiculograms
1976	CID0728	Comparative trial of three Adriamycin combinations in non-oat cell lung cancer and other neoplasms
1976	CID0727	Sequential L-asparaguinase and methotrexate, with or without Adriamycin in patients with neoplasms refractory to primary chemotherapy
1976	CID0687	Evaluation of continual catheter administration of elemental diet in patients with malignant disease
1976	CID0718	Cooperative project to evaluate the efficacy of pi mesons in the management of patients with inoperable cancer
1976	CID0669	Evaluation of chronic oral propranolol therapy on LV segmental wall motion and LV ejection fraction
1976	CID0668	Effects of coronary angiography on resting left ejection fraction
1976	CIDS-7624	Adriamycin vs adriamycin + cis-platinum in transitional cell bladder carcinoma
1977	CIDC27-77	Nonsuppressible plasma immunoreactive ACTH levels in cancer patients

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1977	CIDC25-76	Cardiac reaction to mediastinal radiation in patients with lymphoma
1978	CID0860	CIA vs ifosfamide alone in intensive squamous lung cancer
1978	CID0861	Combination OT for stages III & IV ovarian carcinoma resistant to Adria-CTX or single alkylating agent
1978	CID0896	Combined modality for resectable lung cancer
1978	CID0906	Diglycoaldehyde in adult leukemia phase II study
1978	CID0908	Rubidazone in relapsing lymphoma patients previously untreated with anthracycline derivatives, phase II
1978	CID0859	Chemotherapy of previously treated patients using VBAP, phase I
1978	CID0856	Chemotherapy of advanced carcinoma of the breast with rubidazone, phase II
1978	CID0855	Addition of DDP and bleomycin to VBAP in relapsing and resistant myeloma patients
1978	CID0916	Management of obligoblastic leukemia
1978	CID0883	Cis-diamine-dichloro-platinum in refractory disseminated malignant melanoma
1978	CID0955	Diglycoaldehyde in metastatic malignant melanoma, phase II study
1978	CID0980	Comparison of methotrexate and cis-platinum for patients with advanced squamous cell carcinoma of the head and neck region
1978	CID0921	Maytasine therapy of advanced breast cancer, phase II study
1978	CIDF-25-72	Radioimmunoassay of diphenylhydantoin
1978	CIDS-7736	Evaluation of anguidine in the treatment of urological mailgnancies, phase II
1979	CID79-052	Evaluation of maytansine in the treatment of relapsing Hodgkin's and non-Hodgkin's lymphoma
1979	CID79-087	Clinical evaluation of Tc-99m
1979	CID79-077	Post-myocardial infarction trial
1979	CID79-060	Evaluation of estrogen-antagonist in management of refractory large bowel tumors

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1979	CID79-059	VP-16-213 in acute monocytic and myelomonocytic leukemias, phase II
1979	CID79-054	Vinblastine sulfate in the management of resistant chronic myelogenous leukemia, phase II
1979	CID79-050	Hexamethylmelamine vs FAC in advanced transitional-cell bladder carcinoma in patients with impaired renal function, phase II-III
1979	CID79-047	BCG immunotherapy of recurrent superficial bladder cancer
1979	CID79-027	Evaluation of chlorozotocin in gastrointestinal cancer, phase II
1979	CID79-026	Evaluation of chlorozotocin in lung cancer, phase II
1979	CID79-014	Maytansine in advanced sarcoma, phase II
1979	CID79-119	Phase II evaluation of galluim nitrate in soft tissue and bone sarcoma
1979	CID79-118	Gallium nitrate in patients with malignant lymphoma - Hodgkin's and non-Hodgkin's, phase II
1979	CID79-117	Gallium nitrate in previously treated patients with metastatic breast cancer, phase II
1979	CID79-116	Treatment of early squamous cell carcinoma of the head and neck with initial surgery and/or radiotherapy followed by chemotherapy vs no further treatment, phase III
1979	CID78-008	Study of nifedipine in the treatment and prevention of variant angina pectoris
1979	CID79-024	Short-term use of anti-thyroid drugs in treatment of diffuse toxic goiter
1979	CID79-056	Carcinoembryonic antigen as an indicator for second look surgery in colorectal cancer: A randomized, prospective clinical trial, phase II
1979	CID0207	Protection against myocardial anoxia by metabolic inhibitors
1979	CID0979	Anguidine in central nervous system tumors
1980	CID80-108	Benzydamine HCL for the treatment of oropharyngeal mucositis caused by radiotherapy or chemotherapy
1980	CID80-056	Evaluation of acridinylaminomethanesulfon-m-anisidide (AMSA) in metastatic or recurrent epithelial carcinoma of the female genital tract

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1980	CID80-057	Evaluation of m-AMSA in metastatic carcinoma of GU tract except renal carcinoma, phase II
1980	CID80-058	Chemotherapy of functioning and non-functioning islet cell carcinoma with chlorozotocin, phase II
1980	CID80-059	Chemotherapy for multiple myeloma, phase III
1980	CID80-070	Study of cis-diamine-dichloro-platinum (DDP) for recurrent gliomas, phase II
1980	CID80-071	Radiation therapy in combination with CCNU in patients with incompletely resected gliomas of the brain grade I and II, phase III
1980	CID80-092	Evaluation of 5-FU va phase II drug in metastatic adenocarcinoma of large bowel, phase II - III
1980	CID80-055	Evaluation of mitomycin-C + vincristine + bleomycin + cis-platinum in treatment of disseminated carcinoma of uterine cervix, phase II
1980	CID80-007	Evaluation of acridinylamino-methansesulfon-m-anisidide (AMSA) in metastatic squamous carcinoma of the head & neck, phase II
1980	CID80-114	Prospective study of effect of chemotherapy on cell surface markers in malignant disorders of the lymphocyte
1980	CID80-110	Evaluation of two maintenance regimens in treatment of acute lymphoblastic leukemia in adults, phase II
1980	CID80-091	Evaluation of gallium nitrate in metastatic adenocarcinoma of large bowel, phase II portion
1980	CID80-006	Evaluation of m-AMSA in metastatic or advanced adenocarcinoma of stomach & pancreas, phase II
1980	CID79-126	Development of a radioimmunologic assay for the detection of polyamines as markers for tumor growth and response to chemotherapy
1980	CID80-009	Phase II evaluation of MGBG in metastatic carcinoma of the breast
1980	CID79-136	Lithium carbonate attenuation of granulocytopenia during intensive chemotherapy
1980	CID80-054	Evaluation of methylgloxylbisguanylhydrazone (MGBG) in metastatic renal carcinoma, phase II

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1980	CID80-008	Gallium nitrate in metastatic squamous cell carcinoma and/or local recurrent squamous cell carcinoma of the head & neck, phase II
1980	CID80-010	M-AMSA in hepatocellular carcinoma, gallbladder carcinoma and bile duct carcinoma, phase II
1980	CID80-011	Phase II evaluation of m-AMSA in lymphoma - Hodgkin's and non-Hodgkin's
1980	CID80-012	Phase II evaluation of gallium nitrate in metastatic urological malignancies: Testicular, bladder, prostrate & kidney
1980	CID80-013	Ifosfamide in treatment of resistant disseminated malignant melanoma
1980	CID80-050	Adriamycin and single dose DTIC in soft tissue and bone sarcomas, phase II
1980	CID80-052	Combination chemotherapy with cyclophosphamide, Adriamycin and cis-platinum vs, m-AMSA in patients with advanced transitional cell cancer of the urinary bladder with good renal function, phase II
1980	CID0055	Combined modality therapy for breast carcinoma, phase III, SWOG 7827
1981	CID81-023	Antemetic trials in patients receiving cancer chemotherapy - a comparison of two dose schedules of oral delta-9-tetrahydrocannabinol (THC)
1981	CID81-060	Performance of percutaneous transluminal coronary angioplasty (PTCA)
1981	CID81-076	Evaluation of combined chemotherapy and hyperbaric oxygen in patients with (a) locally advanced solid tumor primaries or metastases for which no effective conventional treatment exists and (b) locally...
1981	CID81-133	Large bowel cancer and colonic microbial metabolism
1981	CID81-036	Musculoskeletal pain treatment in chronic low back: TENS vs dynamic interferential TENS
1982	CID82-169	Phase II trial of ara-C plus cis-platinum for treatment of adenocarcinoma
1982	CID82-057	Electron microscopic comparison of gingival and muscle capillary basement membrane thickness in diabetic and non-diabetic patients
1982	CID82-008	Evaluation of bovine pericardium for use in repair of congenital intracardiac defects
1982	CID82-040	Combined chemotherapy and radiation therapy (ABCX) for squamous cell carcinoma of cervical esophagus

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1982	CID82-163	Effect of long-term treatment with cromolyn sodium on non-specific bronchial hyperreactivity
1982	CID82-161	One-time investigational protocol for relapse oat cell carcinoma of lung in patient (name redacted)
1982	CID82-159	One-time use of investigational drug VP-16 in oat cell carcinoma of lung in patient (name redacted)
1982	CID82-154	One time use of experimental interferon therapy for disseminated renal cell carcinoma for patient (name redacted)
1982	CID82-150	Phase II trial of human lymphoblastoid interferon (Welleferon) in metastatic renal adenocarcinoma - phase II pilot
1982	CID82-148	Single dose pharmacokinetics of copreomycin in patients with impaired renal function
1982	CID82-144	One time use of mexiletine in (name redacted)
1982	CID82-135	Patch aortoplasty in correction of infantile coarctation of the aorta
1982	CID82-011	Prospective randomized study of effect of laser photocoagulation on preservation of vision of uremic diabetics
1982	CID82-115	Adjuvant hyperbaric oxygen therapy in surgical management of intestinal complications of radiotherapy
1982	CID82-103	Effect of hyperbaric oxygen on premalignant mucosal changes (pilot study)
1982	CID82-095	82-095
1982	CID82-094	One-time use of experimental chemotherapeutic protocol for (name redacted)
1982	CID82-078	One-time use of mexiletine, (name redacted)
1982	CID82-058	Adjuvant postoperative intrahepatic infusional chemotherapy for patients with adenocarcinoma of the colon or rectum following surgical resection
1982	CID82-010	Effect of passive mobilization on improvement of active range of motion in post-forearm fracture patients
1982	CID82-036	Phase II evaluation of 5-fluorouracil, Adriamycin, mitomycin-C, and bleomycin (FAM-Bleo), combination chemotherapy for advanced squamous cell carcinoma of esophagus and anus and cloacogenic carcino

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1982	CID82-041	5-Fluorouracil, Adriamycin, mitomycin-C, cis-platinum (FAMP) combination chemotherapy for advanced adenocarcinoma of esophagus, stomach, and pancreas: Phase I-II study
1982	CID82-037	Adjuvant chemotherapy (FAM) after curative resection for adenocarcinoma of stomach or esophagus
1982	CID82-130	Use of experimental systemic adjuvant therapy for stage II malignant melanoma utilizing bisantrene on one time basis
1983	CID83-094	Use of Teletronics Pasar model no. 4151 anti-tachycardia pacemaker in (name redacted)
1983	CID83-086	Effect of hyperbaric oxygen on tumoricidal activity of cross-linked oxidase-peroxidase
1983	CID83-083	Combination chemotherapy of unfavorable histology non-Hodgkin's lymphoma with CHOP and CVB (alternating), phase II
1983	CID83-082	Treatment for advanced non-small cell lung cancer: PVP versus PVPM versus PVE versus PVEMI versus FOMI/CAP, phase III
1983	CID83-079	Clinical evalulation of indium-111 labeled autologous leukocyte in autologous plasma
1983	CID83-152	One time use of plasma perfusion with protein-A in therapy of refractory breast carcinoma in (name redacted)
1983	CID83-070	Intensive consolidation therapy with autologous bone marrow transplantation in treatment of adult acute leukemia
1983	CID83-069	Clinical evaluation of Tc-99m antimony sulfide colloid in radionuclide lymphoscintigraphy
1983	CID83-081	Evaluation of subcutaneous alpha interfenon in patients with multiple myeloma resistant to conventional therapy or previously untreated
1983	CID83-108	One-time use of alpha-2 interferon - multiple myeloma
1983	CID83-113	Evaluation of adjuvant therapy and biological parameters in node negative operable female breast cancer (ECOG EST-1180), intergroup study
1983	CID83-140	One time use of plasma perfusion with protein-A in the therapy of refractory breast carcinoma in (name redacted)

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1983	CID83-158	Effect of autotransfusion on myocardial function during balloon angioplasty
1983	CID83-163	One-time request for the enrollment of patient (name redacted) into the CCSG 681 intergroup rhabdomyosarcoma study II
1983	CID83-188	Combination chemotherapy with m-AMSA, cis-platinum and MGBG for refractory lymphoma, phase II
1983	CID83-063	Effect of sodium hypochloride and citric acid solutions on connective tissue new attachment
1983	CID83-110	Effect of ultraviolet radiation on aerobic cutaneous microorganisms in patients with atopic dermatitis
1983	CID83-189	Phase II study of doxorubicin, mitomycin-C, and 5-fluorouracil in the treatment of metastatic adenocarcinoma of the prostate
1983	CID83-134	One-time use of plasma perfusion with protein-A in therapy of refractory breast carcinoma in (name redacted)
1983	CID83-018	Evaluation of bisantrene hydrochloride in refractory multiple myeloma, phase II
1983	CID83-061	One-time use of investigational bone marrow transplant protocol for (name redacted)
1983	CID83-009	Chemoprevention of actinic keratosis with topical vitamin A acid
1983	CID83-014	Evaluation of combined or sequential chemo-endocrine therapy in treatment of advanced adenocarcinoma of prostate, phase III
1983	CID83-124	Phase I trial of plasma perfusion in therapy of malignant disease
1983	CID83-017	Randomized comparison of Adriamycin, mitoxantrone, and bisantrene in patients with metastatic breast cancer not previously exposed to intercalating chemotherapy, phase III
1983	CID83-019	Evaluation of aclacinomycin A in colorectal carcinoma, phase II
1983	CID83-021	Correlation between progesterone receptor and response to tamoxifen in patients with newly diagnosed metastatic breast disease, phase II
1983	CID83-022	One-time use of experimental drug amiodarone for patient (name redacted)
1983	CID83-026	Alpha-2 interferon protocol for advanced stage refractory Hodgkin's disease

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1983	CID83-036	Study of human tumor stem cell assay system
1983	CID83-039	Evaluation of aclacinomycin A in adult acute leukemia, phase II-pilot
1983	CID83-016	Treatment for advanced adenocarcinoma and large cell carcinoma of lung: FOMI vs CAP vs FOMI/ CAP, phase III
1983	CID83-031	Evaluation of bisantrene hydrochloride in adult acute leukemia, phase II
1983	CID83-038	Evaluation of bisantrene hydrochloride in hepatoma, phase II
1983	CID83-037	Evaluation of bisantrene hydrochloride in refractory malignant melanoma, phase II
1983	CID83-035	Evaluation of DHAD in refractory multiple myeloma, phase II
1983	CID83-034	Evaluation of DHAD in advanced squamous cell carcinoma of the head and neck, phase II
1983	CID83-033	Evaluation of two combination chemotherapy programs, Adriamycin and cis-platinum (AP) versus Adriamycin, cis-platinum plus VP 16-213 (VAP), in treatment of extensive squamous cell ...
1983	CID83-032	Evaluation of bisantrene hydrochloride in refractory ovarian cancer, phase II
1983	CID0016	ETR - for phase II trial of high dose VP-16 etoposide an autologous bone marrow transplantation as therapy for recurrent or refractory malignant brain tumors for patient (name redacted)
1983	CID0039	Phase II trial of high dose Melphalan and autologus bone marrow transplantation as therapy for resistant malignancies
1984	CID84-148	Treatment of newly diagnosed acute non-lymphocytic leukemia for children greater than one month but less than twenty-one years
1984	CID84-104	Trial of low dose continuous infusion of ara-C for treatment of preleukemia
1984	CID84-098	One time use of investigational device, Cybertach-60 anti-tachycardia pulse generator in (name redacted)
1984	CID84-100	Effect of intravenous nitroglycerin and nitroprusside on ventricular function in acute ischemic coronary syndromes

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1984	CID84-089	One time use of high dose BCNU and autologous bone marrow transplantation in (name redacted)
1984	CID84-101	Evaluation of diastolic left ventricular function in acute ischemia
1984	CID84-187	One time use request for bone marrow transplant followed by BCNU therapy for malignant glioma of the spinal cord for patient (name redacted)
1984	CID84-081	Multi-site study of effects of Didronel IV infusion on hypercalcemia due to malignant disease or primary hyperparathyroidism
1984	CID84-099	Phase III trial comparing epirubicin to 5-fluorouracil in advanced sigmoid and rectal carcinoma
1984	CID84-105	Comparative effectiveness of and preference for guided imagery and progressive muscle relaxation in relieving the pain and distress of oncologic patients
1984	CID84-115	Emergency treatment request for allogeneic bone marrow transplant
1984	CID84-145	Treatment of newly diagnosed acute lymphoblastic leukemia in children with a good prognosis
1984	CID84-153	National Wilms' tumor study-3 (NWTS-3)
1984	CID84-046	Phase II trial of high dose BCNU and autologous bone marrow transplantation as therapy for malignant brain tumors
1984	CID84-155	Treatment of second remissions or initial induction failures in children with acute lymphocytic or acute undifferentiated leukemia
1984	CID84-156	Emergency treatment of breast cancer in patient (name redacted)
1984	CID84-167	Intergroup rhabdomyosarcoma study II
1984	CID84-186	Phase II trial of cis-platinum plus 5-fluorouracil for treatment of refractory metastatic breast adenocarcinoma
1984	CID84-144	Treatment of newly diagnosed acute lymphoblastic leukemia in children with an intermediate prognosis
1984	CID83-178	Computerized tomography directed mediastinal bronchoscopic needle aspiration in bronchogenic carcinoma

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1984	CID84-070	One-time use of phase II trial of high dose BCNU and autologous bone marrow transplantation as therapy for malignant brain tumors for (name redacted)
1984	CID84-077	Sucralfate inhibition of tumor cell implanation in urinary bladder
1984	CID83-177	Comparison of combination chemotherapy with VP-16 and cis-platinum vs BCNU thiotepa, vincristine and cyclophosphamide in patients with small cell carcinoma of the lung who have failed or...
1984	CID83-060	Investigation of the Telectronics model 4151 programmable scanning arrhythmia reversion pulse generator
1984	CID83-179	Investigation of the use of amiodarone for ventricular arrhythmias
1984	CID83-180	Investigation for use of mexiletine for ventricular arrhythmias
1984	CID84-031	Transcutaneous oxygen/carbon dioxide (tCO2, CO2) measurement in neurosurgical patients: A multivariant analysis of cardiovascular effects upon tCO2/CO2
1984	CID84-007	One-time use of experimental drug amiodarone for patient (name redacted)
1984	CID84-022	One-time use of experimental drug amiodarone for patient (name redacted)
1984	CID84-025	One-time use of experimental drug amiodarone for patient (name redacted)
1984	CID84-060	Evaluation of patients undergoing transurethral resection of prostate (TURP) for malignancy with transrectal biopsy
1984	CID83-184	Study of the use of non-invasive pulsed Doppler determination of cardiac output in neonate
1984	CID83-166	Use of phase II trial of high dose BCNU and autologous bone marrow transplantation as therapy for malignant brain tumors for patient (name redacted)
1984	CID0068	Use of radioimmunoassay (RIA) for therapeutic drug level monitoring of cyclosporine
1984	CID0070	Evaluation of bisantrene hydrochloride (NSC-337766) for the treatment of leukemia and solid tumors in childhood, CCSG 086
1985	CID85-051	Case control study of acute non-lymphocytic leukemia

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1985	CID85-052	Epidemiology of osteosarcoma in childhood
1985	CID85-054	Case control study of Ewing's sarcoma
1985	CID85-103	Trial of Norfolk Medical peritoneal-access-port for repeated removal of recurrent pleural effusions related to malignancies
1985	CID85-110	Double-blind evaluation of intermittent therapy with Transderm-Nitro versus placebo in treatment of chronic stable angina
1985	CID85-050	Case control study of risk factors for Wilms' tumor
1985	CID85-125	One-time use of MSK protocol T-10 for (name redacted) with malignant fibrous histiocytoma of bone
1985	CID85-121	Evaluation of degree of effectiveness of EBI bone healing system pulsing electromagnetic fields in treatment of avascular necrosis of femoral head
1985	CID85-095	Emergency treatment request, replacement of Pasar 4151 with updated model Pasar 4172 anti-tachycardia pacemaker in (name redacted)
1985	CID85-049	Epidemologic and cytogenic study of retinoblastoma
1985	CID85-035	Emergency treatment request to place a peritoneal-access-catheter in patient (name redacted)
1985	CID85-028	Emergency treatment request to perform catheter ablation of accessory by-pass for patient (name redacted)
1985	CID85-019	Combination chemotherapy of intermediate and high-grade non-Hodgkin's lymphoma with m-BACOD, phase II
1985	CID85-018	Multiple drug adjuvant chemotherapy for patients with estrogen receptor negative stage II carcinoma of breast, phase III, SWOG 8313
1985	CID85-163	One time use of BCNU and autologous bone marrow transplantation for (name redacted)
1985	CID85-160	One time use of SWOG protocol 8309 for treatment of acute myelogenous leukemia in patient (name redacted)
1985	CID85-150	One time use of autologous bone marrow transplantation, Cytoxan and total body irradiation for (name redacted)

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1985	CID0015	ETR - for phase II trial of high dose BCNU and autologous bone marrow transplantation as therapy for malignant brain tumors for patient (name redacted)
1985	CID0025	ETR - to use high dose VP-16 and autologous bone marrow transplantation for patient (name redacted)
1985	CID0013	ETR - catheter ablation of accessory bypass tract in patient (name redacted)
1985	CIDQ-405	Efficacy of cefotetam disodium (Cefotan) on anaerobic bacteria, p.i.
1985	CIDM-456	Prediction of left main and severe three-vessel coronary artery disease by a non-invasive scoring index, p.i.
1985	CID0024	ETR - the use of high dose Cytoxan and total body irradiation followed by autologous BMT as therapy for refractory diffused histiocytic lymphoma to treat patient (name redacted)
1986	CID85-146	Hemodynamic effects of intravenous metoprolol on left ventricular function in acute and threatened myocardial infarction
1986	CID86-133	Emergency treatment request for preoperative and postoperative adjuvant chemotherapy for osteosarcoma of extremity for patient (name redacted)
1986	CID86-119	Emergency treatment request for treatment of cancer associated hemolytic uremic syndrome with staphylococcal protein A immunoperfusion in patient (name redacted)
1986	CID87-001	Emergency treatment request for trial of high dose Cytoxan, BCNU, and VP-16 followed by autologous bone marrow transplantation to treat patient (name redacted)
1986	CID86-170	Emergency treatment request for phase II trial of high dose VP-16 and autologous BMT to treat (name redacted) for recurrent testicular cancer
1986	CID86-153	Left ventricular pressure-volume relationship in patients with coronary artery disease
1986	CID86-152	Efficacy of the vest in measuring left ventricular function and detecting silent myocardial ischemia in post-myocardial infarction patients
1986	CID86-143	Emergency treatment request to use NCI protocol 85-c-154a phase II study of combination of ifosfamide, mesna, and etoposide (VP-16-213) in children and young adults with recurrent or refractory sarcomas and primitive ...

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1986	CID87-002	Emergency treatment request for use of cromolyn sodium as oral agent
1986	CID86-016	Emergency treatment request for phase II trial of high dose VP-16 and autologous bone marrow transplantation for patient (name redacted)
1986	CID85-154	Esophageal motility in hypothyroid patients pre- and post-treatment with replacement thyroid hormones
1986	CID85-158	Request for use of BCNU and autologous bone marrow transplantation
1986	CID85-159	One time use of BCNU and autologous bone marrow transplantation to treat (name redacted)
1986	CID86-150	Preoperative and postoperative adjuvant chemotherapy for osteosarcoma of extremity
1986	CID86-005	Emergency treatment request for phase II trial of high dose VP-16 followed by autologous bone marrow transplantation as therapy for recurrent or refractory malignant brain tumors for patient (name redacted)
1986	CID86-118	Emergency treatment request for therapy of refractory adult acute myleogenous leukemia with amsacrine given as a single agent in patient (name redacted)
1986	CID86-035	Intensive therapy with allogenic or autologous bone marrow transplantation following induction and consolidation in treatment of acute myelogenous leukemia (AML)
1986	CID86-036	Clinical program for implantation and use of Mediport II
1986	CID86-042	Emergency treatment request for phase II trial of high dose BCNU and autologous bone marrow transplantation for patient (name redacted)
1986	CID86-067	Comparison of isosorbide-5-mononitrate and isosorbide dinitrate in patients with angina pectoris
1986	CID86-090	Determination of normal standards for renal size in premature infants by ultrasound imaging
1986	CID86-095	Emergency treatment request to use pentostatin in hairy cell leukemia for patient (name redacted)
1986	CID86-100	Phase III comparison of CHOP versus m-BACOD versus PRO MACE-CYTA BOM versus MACOP-B in patients with intermediate or high-grade non-Hodgkin's lymphoma, SWOG 8516

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1986	CID86-101	Clinical trial in patients with stage II and III completely resected non-small cell cancer of lung comparing chemotherapy (CAP) vs no therapy following surgery - comparative study of immediate combination chemo.... LCSG 853
1986	CID86-041	Emergency treatment for phase II trial of high dose VP-16 and autologous bone marrow transplantation for patient (name redacted)
1986	CID86-003	Trial of cis-platinum plus 5-fluorouracil with concomitant radiotherapy for unresectable localized non-small cell carcinoma of lung
1986	CID0022	ETR - for the use of high dose cyclophosphamide, BCNU, and etoposide with autologous bone marrow transplantation for treatment of patient (name redacted) whose diagnosis is recurrent lymphoma
1986	CID0023	ETR - of high dose cyclophosphamide, BCNU, and etoposide with autologous BMT as therapy for recurrent lymphoma for patient (name redacted)
1986	CID0031	Treatment of selected intermediate risk patients with stage Ib carcinoma of the cervix after radical hysterectomy and pelvic lymphadenectomy: Pelvic radiation therapy versus no further therapy, GOG 92
1986	CID0018	ETR - for total lymphoid irradiation in intractable systemic lupus erythematosus vasculitis for patient (name redacted)
1986	CID0017	ETR - for phase II trial of high dose VP-16 and autologous bone marrow transplantation as therapy for recurrent or refractory malignant brain tumors R.V.E.
1986	CID0008	Clinical evaluation of technetium-99m hexamibi (RP-30A) as an adjunct in conjunction with stress testing for the diagnosis of ischemic heart disease
1986	CID0007	Barium enema x-ray preparation comparing Braintree Labs F-38 PEG-ELS vs standard cleansing methods
1986	CID0006	Autologous bone marrow transplantation for poor prognosis lymphomas - a pilot dose escalation study
1986	CID0002	Phase II pilot program of concurrent chemotherapy and radiation therapy before surgery in patients with stage III (T1-2 and selected T3, N2, MO) non-small cell lung carcinoma
1986	CID0005	Allogeneic bone marrow transplantation for life threatening bone marrow disease

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1986	CID0014	ETR - for intensive consolidation therapy with autologous bone marrow transplantation in the treatment of acute mylogenous leukemia (AML) for patient (name redacted)
1986	CID0067	Treatment of aplastic anemia with allogeneic bone marrow transplantation from HLA-identical donors
1986	CID0040	Phase II trial of high dose VP-16 autologous bone marrow transplantation as therapy for recurrent refractory malignant brain tumors
1986	CID0041	Phase II trial of high dose VP-16 and autologous BMT as therapy for advanced non-small cell lung cancer
1987	CID88-034	National Wilms' tumor study 4, POG 8650
1987	CID87-097	Phase II study of the combination of ifosafamide, mesna, and etoposide (VP-16-213) in children and young adults with recurrent sarcomas, primitive neuroectodermal tumors, and other tumors
1987	CID87-112	Emergency treatment request for high dose busulfan and cyclophosphamide with autologous bone marrow transplantation for patient (name redacted)
1987	CID88-019	Growth of human basal cell carcinoma cells in defined medium and study of their growth and immunological characteristics
1987	CID88-016	Preclinical abnormalities of left ventricular function in diabetics
1987	CID88-031	Emergency treatment request to use DTIC to treat patient (name redacted) for malignant melanoma and sarcoma
1987	CID87-084	Emergency treatment request for use of phase II study of the combination of ifosfamide, mesna, and etoposide (VP-16-213) in children and young adults with recurrent sarcomas and primitive neuroectodermal tumors and other...
1987	CID88-027	Unfavorable medulloblastoma and intracranial primitive neuroectodermal tumors (PNET), malignant ependymoma, ependymoblastoma, pineoblastoma, and central neuroblastoma
1987	CID87-017	Pilot study to evaluate efficacy of intrapleural chemotherapy in management of malignant pleural effusions
1987	CID87-004	Prospective randomized trial to determine benefit of surgical resection of residual disease following response of small cell lung cancer to combination chemotherapy, LCSG 832

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1987	CID87-078	Emergency use of high dose busulfan and cyclophosphamide with autologous bone marrow transplantation to treat patient (name redacted) for recurrent acute myeloblastic-leukemia
1987	CID87-005	Randomized comparative trial of lobectomy versus limited resection for patients with cancer of lung
1987	CID87-009	Phase II study of piritrexim (BW 301U) injection in soft tissue sarcoma
1987	CID87-031	Phase II study of carbetimer in advanced non-small cell carcinoma of lung
1987	CID87-048	Effect of isoproterenol stress on ventricular dynamics as assesed by nuclear probe in patients referred for cardiac catheterization
1987	CID87-051	Efficacy and safety of nisoldipine (BAY K 5552) in treatment of exercise induced angina pectoris
1987	CID87-074	Phase I-II evaluation of DTIC (dimethyltriazenoimidazole carboxamide) in the treatment of malignant melanoma and sarcoma on a single dose schedule
1987	CID87-067	Bopindolol open safety trial (BOST); protocol 03, AHR-4795
1987	CID87-050	Percutaneous balloon valvuloplasty in adult aortic stenosis and mitral stenosis
1987	CID87-066	Open-label study to evaluate the safety, tolerability, and hemodynamic response of CGS-16617 in congestive heart failure
1987	CID87-055	Efficacy of flosequinan (BTS 49465) on exercise tolerance and quality of life in patients with congestive heart failure
1987	CID0001	Treatment of recurrent brain tumor at sites other than the brain stem with an eight-drug-in-one-day regimen, CCSG 091
1987	CID0063	Thallium esophageal, paced stress testing: Value in detection of coronary artery disease
1987	CIDEE-EEE	LCSG 85q, assesment of quality of life in LCSG patients
1987	CID0019	ETR - for use of cranial radiation in intractable systemic lupus erythematosus CNS vasculitis for patient (name redacted)
1987	CID0020	ETR - for use of high dose busulfan and cyclophosphamide with autologous bone marrow transplantation as therapy for recurrent acute myeloblastic leukemia for patient (name redacted)

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1988	CID89-058	Phase III trial of cisplatin alone or in combination with doxorubicin, vinblastine and methotrexate in advanced bladder cancer, SWOG 8594
1988	CID88-021	Dose response evaluation of bopindolol in the treatment of stable angina pectoris, protocol 13, study 7, ahr-4795
1988	CID89-054	Randomized phase II study of preoperative therapy for patients with technically unresectable non-small cell lung cancer, LCSG 881
1988	CID89-061	Phase III evaluation of high dose vs standard dose cisplatin combined with bleomycin and VP-16 for advaced metastatic testicular cancer
1988	CID88-054	Emergency treatment request for high dose busulfan and cyclophosphamide with autologous bone marrow transplantation to treat patient (name redacted)
1988	CID88-045	Evaluation of BW TPA in the initial analysis and maintenance of patency of coronary arteries in patients with acute myocardial infarction; p52 protocol 10
1988	CID88-102	Comparison of percutaneous transluminal balloon angioplasty and laser thermal angioplasty in atherosclerotic occlusive disease of the femoropopliteal artery
1988	CID88-098	Comparison of flecainide vs procainamide in patients with Wolff-Parkinson-White syndrome using esophageal pacing
1988	CID88-087	Double-blind evaluation of Transderm-Nitro vs placebo in the treatment of transient myocardial ischemia in male patients with coronary artery disease and asymptomatic ischemic events
1988	CID88-060	Phase II trial of carboplatin (NSC-241240, CBDCA) in children with recurrent or metastatic solid tumors following therapy of higher priority
1988	CID88-058	Centralized non-small cell lung cancer specimen repository and DNA/MA bank, LCSG 871
1988	CID88-131	Low-dose Mexitil (mexiletine hydrochloride) for the initial therapy for potentially malignant ventricular arrhythmias
1988	CID0011	Comparison of the Wang 22 gauge cytology needle and 18 gauge histology needle in the staging of bronchogenic carcinoma
1988	CID0065	Evaluation of indium and gallium scanning of hemodialysis access fistulas for abnormalities in the absence of infections

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1988	CID0066	Intercondylar notch: A computed tomography study of size and its relation to tears of the anterior cruciate ligament
1988	60MG147	Treatment of localized non-Hodgkin's lymphoma: Comparison of chemotherapy (CHOP) to chemotherapy plus radiation therapy
1989	CID90-006	Thromboelastography (TEG) during cardiopulmonary bypass (CBP) as a predictor of post-bypass coagulation status
1989	CID90-007	Efficacy and safety of core-coat nisoldipine (BAY K 5552) ten, twenty, and thirty milligram every day versus placebo in patients with stable exertional angina pectoris
1989	CID90-013	Therapy for B-cell acute lymphoblastic leukemia and advanced diffuse undifferentiated lymphomas, phase II, POG 8617/8618
1989	CID90-014	Recombinant alpha-interferon in childhood chronic myelogenous leukemia, phase II, POG 8823/8824
1989	CID90-027	T-cell 3, POG 8704
1989	CID90-037	Randomized prospective study of lumbar spinal fusions with and without transpedicular screw-plate fixation
1989	CID90-071	Osteosarcoma study 2: A randomized trial pre-surgical chemotherapy vs immediate surgery and adjuvant chemotherapy in the treatment of non-metastatic osteosarcoma, phase III, POG 8651
1989	CID90-065	Clinical trial to evaluate natural history and treatment of patients with non-invasive intraductal adenocarcinoma and lobular in-situ registry, NSABP b-17
1989	CID90-067	Emergency treatment request for use of fludarabine to treat patient (name redacted) for refractory chronic lymphocytic leukemia
1989	CID89-246	Evalution of vincristine, Adriamycin, cyclophosphamide, and dactinomycin with or without the addition of ifosfamide and etoposide in the treatment of patients with newly diagnosed Ewing's sarcoma of... POG 8850, CCSG 7781
1989	CID89-112	Effect of two dosage schedules of Dilatrate-SR therapy vs Isordil Tembids (3 weeks) on efficacy and development of tolerance in patients with stable angina pectoris
1989	CID90-068	Treatment of stage D neuroblastoma in children >365 days at diagnosis - a phase II/III study, POG 8741/8742

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1989	CID90-044	Intensive multiple therapy vs autologous bone marrow transplant early in 1st cr for children with acute myelocytic leukemia, phase III, POG 8821
1989	CID89-245	Study of high-risk malignant germ cell tumors in children, POG 9049, CCSG 8822
1989	CID89-234	Double-blind, placebo-controlled, parallel, multicenter study to assess the effects of digoxin withdrawal on exercise tolerance and other measures of clinical efficacy in patients with chronic congestive heart failure...
1989	CID89-233	Double-blind, placebo-controlled, parallel, multicenter study to assess the effects of digoxin withdrawal on exercise tolerance and other measures on clinical efficacy in patients with chronic congestive heart failure in norm...
1989	CID89-232	High dose monthly intravenous pulse vs daily oral cyclophosphamide in lupus nephritis: Clinical and immunologic response
1989	CID89-202	Phase III study of alfa-nl (Welleferon TM) as adjuvant treatment for resectable renal cell carcinoma, SWOG 8792
1989	CID89-201	Trial of cystectomy alone vs neoadjuvant M-VAC + cystectomy in patients with locally advanced bladder cancer, SWOG 8710
1989	CID89-161	Randomized study of etoposide + cisplatin and etoposide + cisplatin (CBDCA) in the management of good risk patients with advanced germ cell tumors, SWOG 8789
1989	CID89-135	Multicenter crossover comparision of intravenous adenosine (Adenoscan trademark) versus exercise in the noninvasive assesment for coronary artery disease by single photon emission computed tomography (SPECT)
1989	CID89-120	Open evaluation of the safety and efficacy of maintenance therapy with oral recainam in the prevention of life-threatening ventricular arrhythmias
1989	CID89-116	Comparison of percutaneous transluminal balloon angioplasty and atherectomy in atherosclerotic stenoses of the femoropopliteal artery
1989	CID89-109	Automatic implantable cardioverter defibrillator electrode function testing with Ventritex HVS-02 electrophysiologic device
1989	CID89-038	Efficacy and safety trial of toremifene vs tamoxifen in postmenopausal patients with metastatic breast cancer - F.A.C.T.

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1989	CID89-118	Comparative inpatient study of the safety and efficacy of three oral recainam doses in the suppression of life-threatening ventricular tachyarrhythmias
1989	CID0009	Comparison of impedence plethysmography to duplex sonagraphy in the diagnosis of deep venous thrombosis
1989	CID0010	Comparison of L-hyoscyamine, glucagon, and placebo for air contrast upper gastrointestinal x-rays
1989	60MG011	Clinical trial to determine the worth of tamoxifen and the worth of breast radiation in the management of patients with node-negative, clinically occult, invasive breast cancer treated with lumpectomy (NSABP b-21 - SGO89-248/7)
1989	CID0059	Treatment of pathologic stage C carcinoma of the prostate with adjuvant radiotherapy, SWOG 8794
1989	CID0003	Phase II study of simultaneous radiation therapy and cisplatin chemotherapy followed by 5-FU and cisplatin chemotherapy in patients with locally advanced, inoperable squamous cell carcinoma of the head and neck
1989	CID0021	ETR - for use of non-standard preparative chemotherapy regimen for allogeneic bone marrow transplant to treat patient (name redacted) for Burkitt's lymphoma
1989	CID0026	Evaluation of technetium Tc-99m sestamibi (Cardiolite) as an adjunct to stress testing for the diagnosis of ischemic heart disease using a short time interval between rest and stress injections
1989	60MG042	Prospectively randomized trial of low-dose leucovorin plus 5-FU, high-dose leucovorin plus 5-FU, or observation following curative resection in selected patients with Duke's B or C colon cancer (SWOG 8899 - SGO 89-097)
1989	60MG146	Treatment of limited small cell lung cancer with concurrent chemotherapy, radiotherapy, with or without GM-CSF and subsequent randomization to maintenance interferon or no maintenance (SWOG 8812 - SGO 89-250)
1990	CID90-069	Study of reproductive function in patients with testicular cancer, SWOG #8711
1990	CID90-109	Comparison of CGS-16949a versus megestrol acetate in postmenopausal women with breast carcinoma - F.A.C.T.
1990	CID90-321	Comparison of verapamil and adenosine for the treatment of paroxysmal supraventricular tachycardia in the emergency department

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1990	CID90-296	Intensive qod ifosfamide for the treatment of children with recurrent or progressive CNS tumors - a phase II study, POG 9060
1990	CID90-300	Emergency treatment request, therapy of refractory adult acute myelogenous leukemia with amsacrine given as a single agent to treat patient (name redacted)
1990	CID90-301	Emergency treatment request for use of fludarabine phosphate in patients with refractory chronic lymphocytic leukemia to treat patient (name redacted)
1990	CID90-305	Prevalence and clinical significance of radiographic abnormalities of the cervical spine
1990	CID90-315	Treatment of isolated central nervous system leukemia, POG 9061
1990	CID90-295	Evaluation of quality of life in patients with stage C adenocarcinoma of the prostate enrolled on SWOG 8794 (int-0086), SWOG 8994
1990	CID90-318	Prognostic value of cytometry measurements of breast cancer DNA from postmenopausal patients with involved nodes and receptor positive tumors: A companion protocol to SWOG 8814 (SWOG 8854)
1990	CID90-320	ADR-529 as a cardioprotective agent in a phase III randomized trial of FAC vs FAC + ADR-529 in the treatment of disseminated carcinoma of the breast
1990	CID90-328	Comparison of dual photon x-ray densitometry percent body fat determination with water immersion density determination of body fat
1990	CID90-337	Dose ranging study of intravenous amiodarone hydrochloride in patients with refractory ventricular tachycardia/ventricular fibrillation
1990	CID91-017	Thyroid hormone kinetics in elite athletes
1990	CID91-051	Pilot study of prophylactic ursodiol to reduce hyperbilirubinemia complicating allogenic bone marrow transplantation
1990	CID91-059	Phase II study of the treatment for lymphoma with Cytoxan and VP-16 for cytoreduction followed by high-dose chemotherapy consisting of BCNU, ara-C, Cytoxan and VP-16 (BACE) with autologous bone marrow transplant
1990	CID90-105	Evaluation of the efficacy and safety of two daily doses of isosorbide-5-mononitrate
1990	CID90-092	Multicenter crossover comparison of intravenous adenosine (Adenoscan) versus stress in the noninvasive/invasive assessment of cardiovascular disease (IND 30,974)

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1990	CID90-317	Phase III AZQ 24 hour infusion vs BCNU for adult high grade gliomas, SWOG 8737, (int 0093)
1990	CID90-187	HMJF RV-64, evaluation of cardiac function in patients with HIV-1 infection
1990	CID90-322	Evaluation of ADR-529 as a cardioprotective agent in a randomized double-blind phase III trial of CAV + placebo vs CAV + ADR-529 in the treatment of extensive disease small cell lung cancer
1990	CID90-294	Treatment of advanced Hodgkin's disease - a randomized phase III study comparing ABVD vs MOPP/ABV hybrid, SWOG 8952 (int-0111)
1990	CID90-110	Open, randomized single-dose study of intravenous MDL 73,147 EF versus standard anti-emetic therapy in patients receiving cisplatin-containing chemotherapy
1990	CID90-121	Emergency treatment request for use of fludarabine: A new agent with major activity against chronic lymphocytic leukemia, to treat patient (name redacted) for refractory chronic lymphocytic leukemia
1990	CID90-159	Adjuvant therapy of primary osteosarcoma: A phase III intergroup study, SWOG 8693
1990	CID90-115	Evaluation of pressure gradients and aortic valve area in patients with critical aortic stenosis
1990	CID90-211	Emergency treatment request for use of levamisole, a new agent with major activity against colon cancer, to treat patient (name redacted)
1990	CID90-282	Evaluation of vitamin B12 levels in patients undergoing chemotherapy for malignancy
1990	CID90-293	Comparison of bilateral orchiectomy with or without flutamide for the treatment of patients with histologically confirmed stage D2 prostate cancer, SWOG 8894
1990	CID90-158	Adjuvant chemotherapy with 5-fluorouracil, Adriamycin, and mitomycin-C (FAM) versus surgery alone for patients with locally advanced gastric adenocarcinoma, phase III, SWOG 7804
1990	CID90-283	Prospective evaluation of the effect of immunotherapy on lymphocyte surface markers using fluorescence-activated cell sorting
1990	CID90-216	Multi-center double-blind placebo controlled study of fluconazole in the early empirical treatment of suspected fungal infection in febrile neutropenic patients undergoing therapy for cancer - F.A.C.T.

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1990	CID90-265	Anticardiolipin antibodies and spontaneous abortion
1990	CID90-222	Neuroblastoma biology protocol, POG 9047
1990	CID90-221	VP-16, AMSA +/- 5-azacytidine in refractory acute non-lymphoblastic leukemia (ANLL), POG 8820
1990	CID90-289	Re-treatment protocol for the use of single-dose IV MDL 73,147 EF in patients receiving high-dose (> 80 mg/m2) cisplatin-containing chemotherapy
1990	CID0054	Role of brachytherapy in the management of pancreatic malignancy
1990	CID0035	Treatment of children with high stage medulloblastoma: Cisplatin/VP-16 pre- vs post-irradiation; a phase III study, POG 9031
1990	CID0038	Phase I dose escalation with autologous bone marrow rescue in poor prognosis solid tumors
1990	CID0069	Coronal CT characteristics of paranasal sinuses in normal asymptomatic individuals
1991	CID92-027	Neoadjuvant chemotherapy using cisplatin, bleomycin, and vincristine prior to surgery and/or radiation therapy in advanced carcinoma of the uterine cervix
1991	CID91-206	Armed Forces regression study - F.A.C.T.
1991	CID92-077	Multicenter, double-blind randomized, comparative study on the efficacy and safety of intravenous temafloxacin versus imipenem-cilastatin sodium in the treatment of intra-abdominal infection
1991	CID91-211	Phase II study of high-dose melphalan with hemopoietic stem cell support and GM-CSF in refractory multiple myeloma, SWOG 8993
1991	CID91-203	Therapy for patients with recurrent or refractory neuroblastoma, POG 9140
1991	CID91-223	Phase II evaluation of hepatic chemoembolization with angiostat collagen and cisplatin, mitomycin and doxorubicin
1991	CID91-236	Isis-4 protocol - fourth international study of infarct survival
1991	CID92-022	Magnetic resonance imaging of post-arteriography puncture site hemorrhage
1991	CID92-039	IRS - IV stage 1 disease, POG 9150

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1991	CID92-040	Active
1991	CID92-041	IRS - IV stage 4 disease, POG 9152
1991	CID92-053	Randomized, double-blind comparison of intravenous amiodarone and bretylium in the treatment of patients with refractory, hemodynamically destabilizing ventricular tachycardia or fibrillation
1991	CID92-054	Sotalol for patients with refractory, serious or life-threatening supraventricular and ventricular cardiac arhythmias: Compassionate use
1991	CID92-071	Treatment of malignant supratentorial tumors in children, POG 9135/9136
1991	CID92-072	Second induction and maintenance in childhood acute lymphoblastic leukemia, POG 9110 (simal 6)
1991	CID92-074	Randomized comparative study of high dose cyclophosphamide, cisplatin, and BCNU with autologous bone marrow support vs standard dose cyclophosphamide, cisplatin, and BCNU as consolidation to adjuvant cyclophosphamide, SWOG 9114
1991	CID91-181	Intergroup rectal adjuvant protocol, a phase III study, SWOG 9040, (intergroup 0114)
1991	CID91-150	Perspective pilot study of weekly oral cyclophosphamide in the treatment of refractory rheumatoid arthritis
1991	CID92-070	Intergroup rhabdomyosarcoma study, laboratory evaluation of tumor tissue, POG 9153
1991	CID91-082	Prospective study on the efficacy of orthotics for anterior knee pain in the airman basic population
1991	CID91-161	Phase II study of a 5-day infusion of vinblastine with oral diltiazem in the treatment of metastatic breast cancer
1991	CID91-167	Emergency treatment request for use of fludarabine phosphate for patient (name redacted) with refractory chronic lymphocytic leukemia
1991	CID91-078	Double-blind, randomized, parallel study of two different dose regimens of intravenous MDL 73,147 EF in patients receiving high dose (>80 mg/m2) cisplatin-containing chemotherapy
1991	CID91-089	ALinC 15 classification protocol, POG 9000

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1991	CID91-090	ALinC 15, POG 9005/9006
1991	CID91-091	Phase III comparison of cyclophosphamide, doxorubicin, and 5-fluorouracil (CAF) and a 16-week multi-drug regimen as adjuvant therapy for patients with hormone receptor negative, node-positive breast cancer, SWOG 8931
1991	CID91-114	Comparative trial of Aredia versus placebo for the prevention of skeletal related complication in patients with breast cancer and lytic bone lesions treated with chemotherapy - F.A.C.T.
1991	CID91-118	Evaluation of low back pain in patients with rheumatoid arthritis
1991	CID91-156	Re-treatment protocol for the use of single or multiple dose intravenous MDL 73,2 147 EF in patients receiving high dose (>80mg/m2) cisplatin-containing chemotherapy
1991	CID91-132	Evaluation of quality of life in patients with stage D2 cancer of the prostate enrolled in SWOG 8894 (int-0105), SWOG 9039
1991	CID91-137	Trial evaluating the effectiveness of regional chemotherapy in patients with colo-rectal liver metastasis following the resection of their primary tumor
1991	CID91-149	Percutaneous catheter ablation of accessory pathway conduction using radiofrequency energy
1991	CID91-163	Measurement of interleukin 4 (IL-4), interleukin 8 (IL-8), tumor necrosis factor (TNF alpha), granulocytes-macrophage colony stimulating factor (GM-CSF), histamine releasing factors (HRF) & histamine release inhibiting factors...
1991	CID91-054	Evaluation of bone density measurement of young adults with and without stress fractures
1991	CID0034	Clinical trial to evaluate the worth of tamoxifen in conjunction with lumpectomy and breast irradiation for the treatment of noninvasive intraductal carcinoma (DCIS) of the breast, NSABP Protocol B-24
1991	CID0032	Phase III randomized study of surgery vs. surgery plus adjunctive radiation therapy in intermediate risk endometrial adenocarcinoma, GOG 99
1991	60MG142	Effects of thionamides on the efficacy of radioiodine treatment in patients with Graves' disease
1991	60MG116	Phase III chemotherapy of disseminated advanced stage testicular cancer with cisplatin plus etoposide with either bleomycin or ifosfamide (SWOG 8997 - SGO 91-005)

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1992	CID92-154	Evaluation of cisplatin, etoposide, and bleomycin (BEP) induction followed by vincristine, dactinomycin, and cyclophosphamide (VAC) consolidation in advanced ovarian germ cell tumors - phase II, GOG 90
1992	CID92-155	Evaluation of intraperitoneal chromic phosphate suspension therapy following second-look laparotomy for epithelial ovarian carcinoma (stage III), phase III, GOG 93
1992	CID92-157	Randomized clinical trial for the treatment of women with selected stage Ic and II(a, b, c) and selected stage Ia and Ib ovarian cancer (phase III), GOG 95
1992	CID92-158	Master protocol for phase II intraperitoneal drug studies in treatment of minimal residual ovarian malignancies documented at second look surgery, GOG 102-A
1992	CID92-162	Ifosfamide (NSC 109724) and the uroprotector mesna (NSC 113891) with or without cisplatin (NSC 119875) in patients with advanced, persistent or recurrent mixed mesodermal tumors of the uterus - phase III, GOG 108
1992	CID92-165	Evaluation of adjuvant VP-16 and carboplatin therapy in totally resected ovarian dysgerminoma, GOG 116
1992	CID92-193	Phase III randonized study of cisplatin (NSC 119875) versus Taxol (NSC 125973) versus Taxol and cisplatin in patients with suboptimal stage III & IV epithelial ovarian carcinoma, GOG 132
1992	CID92-167	Study in the use of Provera and tamoxifen citrate (NSC 180973) for the treatment of advanced, recurrent or metastatic endometrial carcinoma, GOG 119
1992	CID92-187	Treatment of refractory multiple myeloma with myeloablative busulfan and cyclophosphamide and autologous bone marrow or peripheral blood stem cell support: A phase II study
1992	CID92-153	Master protocol for phase II drug studies in the treatment of recurrent or advanced uterine sarcomas, GOG 87-A
1992	CID92-100	Study investigating safety and duration of effect of isosorbide-5-mononitrate in a controlled-release formulation in patients with stable effort angina pectoris - F.A.C.T.
1992	CID92-196	Postoperative adjuvant interferon alpha-2b (Intron A) in resected high risk primary and regionally metastatic melanoma, SWOG 9111
1992	CID92-194	Phase II comparison of fludarabine phosphate vs chlorambucil vs fludarabine phosphate plus chlorabucil in previously untreated B-cell chronic lymphocytic leukemia, SWOG 9108

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1992	CID92-164	Bleomycin (NSC 125066), etoposide (NSC 141540), and cisplatin (NSC 119875) (BEP) as first-line therapy of malignant tumors of the ovarian stroma (granulosa cell, Sertoli-Leydig tumor, and unclassified sex cord..., GOG 115
1992	CID92-151	Master protocol for hormonal treatment of advanced or recurrent carcinoma of the endometrium, GOG 81-A
1992	CID92-120	Randomized comparison of chemoprophylaxis using methotrexate versus routine surveillance in the management of the high risk molar pregnancy, GOG 112
1992	CID92-119	Randomized study of cisplatin versus cisplatin plus dibromodulcitol (NSC 104800), versus cisplatin plus ifosfamide and mesna in advanced (stage III or IV), recurrent, or persistent squamous cell carcinoma of the cervix, GOG 110
1992	CID92-116	Monoclonal antibody against free beta-HCG to predict development of persistent gestational trophoblastic disease (PGTD) in patients with hydatidiform mole, GOG 100
1992	CID92-114	Master protocol for a phase II trials of chemotherapy in patients with advanced pelvic malignancies, GOG 26-A
1992	CID92-112	Ifosfamide, carboplatin, etoposide (ICE) treatment of recurrent/resistant malignant solid tumors of childhood - POG 9072
1992	CID92-096	Double blind study of prophylactic ursodiol vs placebo to reduce veno-occlusive disease of the liver (VOD) complicating allogeneic bone marrow transplantation (BMT)
1992	CID92-094	Randomized prospective study comparing radical prostatectomy alone versus radical prostatectomy preceded by androgen blockade in clinical B2 (T2BNXMO) prostate cancer
1992	CID91-038	Evaluation of the I-17m protocol in the management of patients with lymphoblastic lymphoma, a phase II pilot study, SWOG 8954
1992	CID92-036	Phase II/III study of 5-fluorouracil (5-FU) and its modulation in advanced colorectal cancer, SWOG 8905
1992	CID91-127	Comprehensive genetic analysis of brain tumors, POG 8930
1992	CID92-113	Treatment of newly diagnosed astrocytoma, POG 9130
1992	CID92-256	Double-blind placebo controlled trial of daunomycin and cytosine arabinoside with or without RHG-CSF in elderly patients with acute myeloid leukemia, phase III, SWOG 9031

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1992	CID93-005	Phase II trial of cisplatin and cyclophosphamide in the treatment of extraovarian peritoneal serous papillary carcinoma, GOG 138
1992	CID93-006	Randomized comparison of nephrectomy followed by interferon alpha 2-b (Intron-A) versus interferon alpha 2-b (Intron-A) alone in patients with advanced renal cell carcinoma, SWOG 8949
1992	CID93-007	Phase II study of high-dose ara-C/mitoxantrone for the treatment of relapsed/ refractory acute lymphocytic leukemia, SWOG #030
1992	CID93-004	Phase III trial of Taxol at three dose levels and G-CSF at two dose levels in platinum-resistant ovarian carcinoma, GOG 134
1992	60MG006	Clinical trial to assess the relative efficacy of 5-FU + leucovorin with or without inteferon alpha-2a in patients with Duke's B and C carcinoma of the colon
1992	CID92-260	Phase III randomized study of intravenous cisplatin and cyclophosphamide versus intravenous cisplatin and Taxol versus high dose intravenous carboplatin followed by intravenous Taxol and intraperitoneal cisplatin in..., GOG 114
1992	CID92-259	Acquisition of human ovarian and other tissue specimens and serum to be used in studying the causes, diagnosis, prevention and treatment of cancer, GOG 136
1992	CID92-280	Amlodipine study of the angina population (A.S.A.P.): A double-blind, randomized, placebo controlled study
1992	CID92-258	Whole abdominal radiotherapy versus circadian-timed combination doxorubin - cisplatin chemotherapy in advance endometrial carcinoma, GOG 122
1992	CID92-257	Therapy in premenopausal women with advanced ER positive or PGR positive breast cancer: Surgical oophorectomy vs the LH-RH analog Zoladex, SWOG 8692
1992	CID92-207	Intensive chemotherapy for primary central nervous system malignant germ cell tumors in patient (name redacted)
1992	CID0036	Hyperfractionated irradiation for posterior fossa ependymoma, POG 9132
1992	CID92-247	Randomized study of standard chemotherapy versus STAMP 5 with autologous bone marrow transplant in stage IV, poor prognosis breast carcinoma, phase III (intergroup), SWOG 9115

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1992	CID0029	Randomized comparison of hydroxyurea versus hydroxyurea, 5-FU infusion and bolus cisplatin versus weekly cisplatin as an adjunct to radiation therapy in patients with stages IIb, III, and IVa carcinoma of the cervix and negative para-, GOG 120
1992	CID0028	Randomized comparison of 5-FU infusions and bolus cisplatin as an adjunct to radiation therapy, versus radiation therapy alone in selected patients, GOG 109
1992	CID0027	Phase II evaluation of preoperative chemoradiation for advanced vulvar cancer, GOG 101
1992	CID92-204	Multicenter, open-label clinical evaluation of Ativan (R) (lorazepam) injection in the treatment of preprocedural anxiety when used with Zofran (R) in patients undergoing chemotherapy
1992	CID0030	Randomized comparison of radiation therapy and adjunctive hysterectomy versus radiation therapy and weekly cisplatin and adjunctive hysterectomy in patients with bulky stage Ib carcinoma of the cervix, GOG 123
1992	CID92-205	Open-label compassionate-use study of oral recainam
1992	CID92-215	Baby POG 2, POG 9233/34
1992	CID0045	Trial of adjuvant chemo-irradiation after gastric resection for adrenocarcinoma, phase III (RTOG 90-18)
1992	CID92-216	Treatment for children with intermediate risk neuroblastoma POG stage B (all ages and stages C, D, and DS) less than 365 days of diagnosis, POG 9243
1992	CID92-201	Phase II study of 13-cis retinoic acid in the treatment of condyloma acuminatum
1992	CID92-244	Five arm double blind randomized dose-response study of the antiemetic effectiveness of IV dolasetron mesylate in patients receiving cisplatin chemotherapy - F.A.C.T.
1992	CID92-238	Double-blind study of two doses of Lupron depot plus iron vs placebo plus iron in the preoperative treatment of iron deficiency anemia secondary to leiomyoma uteri-induced excessive uterine bleeding - F.A.C.T.
1992	CID92-230	Protocol for non-primary centers evaluating cryovalve heart valve allografts
1992	CID92-229	Use of all-trans retinoic acid (TRA) in setting of relapsed or refractory acute promyelocytic leukemia (APL)

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1992	CID92-228	Accuracy of body composition determination using dual-energy x-ray absorptiometry (DEXA) with changes in hydration
1992	60MG065	Clinical trial to evaluate the effect of dose intensification & increased cumulative dose of postop Adriamycin-cyclophosphamide therapy with G-CSF on disease-free survival and survival of patients with prim breast CA & pos ax nodes (NSABP B25-SOG92-209)
1992	60MG118	Phase III comparison of adjuvant chemoendocrine therapy with CAF and concurrent or delayed tamoxifen to tamoxifen alone in postmenopausal patient with involved axillary lymph nodes and positive receptors (SWOG 8814 - SGO 90-095)
1992	60MG120	Phase III comparison of combination chemotherapy (CAF) and chemohormonal therapy (CAF + Zoladex or CAF + Zoladex and tamoxifen) in premonopausal women with axillary node-positive, receptor-positive breast cancer (SWOG 8851 - SGO 90-226)
1992	60MG119	Phase III comparison of adjuvant chemotherapy with or without endocrine therapy in high-risk, node negative breast cancer patients, and a natural history follow-up study in low-risk node negative patients (SWOG 8897 - SGO 90-180)
1993	CID93-132	Assessing the variability of cephalometric roentgenogram measurements during quiet tidal breathing in patients with obstructive sleep apnea and normals
1993	CID93-157	Colon carcinogenesis: Modulation by dietary intervention
1993	CID93-012	Clinical trial comparing short, intensive AC +/- tamoxifen with conventional CMF +/- tamoxifen in node-negative breast cancer patients with ER-negative tumors, NSABP b-23
1993	CID93-180	Phase III, double-blind, randomized trial of 13-cis retinoic acid (13-CRA) to prevent second primary tumors (SPTS) in stage I non-small cell lung cancer, RTOG 91-01
1993	CID93-125	Randomized study of doxorubicin plus cisplatin versus circadian-timed doxorubicin plus cisplatin in patients with primary stage III & IV, recurrent endometrial adenocarcinoma (phase III), GOG 139
1993	CID93-114	Phase II pilot study of high dose 24-hour continuous infusion of 5-FU and leucovorin and low dose PALA for patients with pancreatic adenocarcinoma, SWOG 9100
1993	CID93-104	Serum vs plasma stability for anticardiolipin testing (ACL)

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1993	CID93-100	Regional cerebral blood flow and glucose rate in patients with complex partial seizures
1993	CID93-088	Effect of procainamide on direct current cardioversion in atrial fibrillation
1993	CID93-086	Phase II study of Taxol in children with recurrent/refractory soft tissue sarcoma, rhabdomyosarcoma, osteosarcoma, Ewing's sarcoma, neuroblastoma, germ cell tumor, Wilms' tumor, hepatoblastoma, and hepatocellular..., POG 9262
1993	CID93-189	Study of peritransplantational ultraviolet-B (UVB) photoprophylaxis of graft-versus-host disease (GVHD) after allogeneic bone marrow transplantation (BMT)
1993	CID93-109	Master protocol for phase II drug studies in treatment of advanced or recurrent carcinoma of the endometrium, GOG 86a
1993	CID93-085	Randomized trial of adjuvant immunotherapy with an allogeneic melanoma vaccine for patients with intermediate thickness, node negative malignant melanoma (T3NOMO), phase III, SWOG 9035
1993	CID93-069	Prospective study of radiographic erosions in rheumatoid arthritis: Does good clinical response in rheumatoid arthritis halt radiographic progression?
1993	CID93-068	Open-label safety study of intravenous amiodarone HCl in patients with life-threatening ventricular tachycardia/fibrillation
1993	CID93-065	Imaging myocardial blood flow with N-13 ammonia
1993	CID93-064	Imaging myocardial metabolism function with F-18 fluorodeoxyglucose (FDG)
1993	CID92-262	Thrombus prevention in tunneled central venous catheters
1993	CID93-027	Treatment of patients with localized non-Hodgkin's lymphoma, a pediatric oncology group phase IV study, POG 9219
1993	60MG035	Phase III study of postoperative radiotherapy for single brain metastases (rtog 90-21 - SGO 93-146)
1993	CID92-221	Phase II study of carboplatin in the treatment of children with progressive optic pathway tumors, POG 8936
1993	CID92-272	Idarubicin in recurrent and progressive childhood brain tumors, POG 9237

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1993	CID93-205	Randomized trial of estrogen replacement therapy versus no estrogen replacement in women with stage I or II endometrial adenocarcinoma, GOG 137
1993	CID94-031	Familial and reproductive factors in ovarian cancer, GOG 143
1993	CID92-245	Double-blind, randomized parallel study of the antiemetic effectiveness of IV dolasetron mesylate vs IV Zofran in patients receiving cisplatin chemotherapy
1993	CID93-045	Assessment of treatment with lisinopril and survival (ATLAS)
1993	CID94-033	Molecular genetic analysis of ovarian cancer families, GOG 144
1993	CID0057	Evaluations of operable bladder cancer patients with preoperative irradiation + 5-FU and inoperable patients with irradiation + 5-FU alone, phase II, SWOG 8733
1993	CID0061	Phase III, randomized prospective comparison between chemotherapy plus radiotherapy, and the same chemotherapy plus radiotherapy together with surgery for selected stage IIIa (positive mediastinal nodes) and selected stage IIIb, no MA, SWOG 9019
1993	CID0062	Randomized phase III study of CODE plus thoracic irradiation versus alternating CAV and EP for extensive stage small cell lung cancer
1993	CID94-029	Pilot study of large cell lymphomas in children and adolescents evaluation APO + IDMTX/HDARA-C, POG 9395
1993	CID0052	Phase II pilot study employing 5-fluorouracil, mitomycin-C, and 59.4 Gy radiotherapy in carcinoma of the anal canal, RTOG 92-08
1993	CID93-206	Controlled trial of cyclosporin as a chemotherapy-resistance modifier in high-risk acute myeloid leukemia, phase III, SWOG 9126
1993	CID0051	Phase I/II trial for localized cancer of the esophagus: External beam irradiation, esophageal brachytherapy and combination chemotherapy (RTOG 92-07)
1993	CID0050	Phase III study of radiation therapy, levamisole and 5-fluorouracil vs 5-fluorouracil and levamisole in selected patients with completely resected colon cancer, RTOG 92-03
1993	CID0048	Phase III evaluation of postoperative radiation in low grade intracranial astrocytomas and oligodendrogliomas, RTOG 91-10

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1993	CID0047	Prospective randomized trial of postoperative adjuvant therapy in patients with completely resected stage II and stage IIIa non-small cell lung cancer, RTOG 91-05
1993	CID0044	Phase III randomized study to compare twice daily hyperfractionation, accelerated hyperfractionation with a split and accelerated fractionation with concomitant boost to standard fractionation radiotherapy for squamous cell carcinoma (RTOG 90-03)
1993	CID0043	Phase III intergroup trial: A prospective randomized comparison of combined modality therapy for carcinoma of the esophagus: Chemotherapy plus surgery versus surgery alone for patients with local/regional disease, RTOG 89-11
1993	CID94-034	Incidence of bladder perforation following transurethral resection of bladder tumors
1993	CID94-002	Chemoprevention trial to prevent second primary tumors with low-dose 13-cis retinoic acid in head and neck cancer, RTOG 91-15
1993	CID93-249	Phase II trial of intravenous vinorelbine (Navelbine) in previously untreated extensive small cell lung carcinoma, SWOG 9058
1993	CID93-250	Evaluation of doxorubicin/vinblastine combined with inhibitors (trifluoperazine/ verapamil) of P-glycoprotein in patients with advanced renal cell carcinoma, phase II, SWOG 9104
1993	CID0037A	Study for treatment of children with newly-diagnosed brain stem glioma using cisplatin as a radiosensitizer with either conventional or hyperfractionated radiotherapy, POG 9239
1993	CID93-251	Adjuvant therapy of primary osteogenic sarcomas, phase II, SWOG 9139
1993	CID93-253	Phase II evaluation of Taxol in patients with relapsed non-Hodgkin's lymphoma or relapsed Hodgkin's disease, SWOG 9246
1993	CID0042	Phase III study of radiotherapy with or without concurrent cisplatin in patients with nasopharyngeal cancer, RTOG 88-17
1993	CID93-257	Controlled trial of cyclosporin A as a chemotherapy resistant modifier in blast phase for chronic myelogenous leukemia, phase III, SWOG 9032
1993	CID94-032	Evaluation of cisplatin and pentoxifylline in advanced or recurrent squamous cell carcinoma of the cervix, GOG 127-c

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1993	CID94-004	GM-CSF randomization plus high-dose "ICE" in the treatment of recurrent/ resistant malignant solid tumors of childhood, a pediatric oncology group phase II study, POG 9360
1993	CID94-005	Primary chemotherapy of poor prognosis soft tissue sarcomas, phase II, SWOG 9119
1993	CID94-006	Chemoprevention of prostate cancer with finasteride (Proscar), phase III, intergroup, SWOG 9217
1993	CID94-026	Effects of dilute epinephrine saline effluent on the tourniquet of routine knee arthroscopies
1993	CID94-030	Evaluation of cisplatin & cyclosporin in recurrent, platinum-resistant, and refractory ovarian cancer, GOG 126b
1993	CID93-254	Clinical trial to evaluate the worth of preoperative multi-modality therapy (5-FU-LV and RTX) in patients with operable carcinoma of the rectum, NSABP r-03
1993	60MG141	Effect of oral D-sotalol on mortality in patients with atherosclerotic coronary heart disease and left ventricular dysfunction (Bristol-Myers Squibb Pharmaceutical Research Institute cv102-023a - SGO 93-264)
1993	CID0071	Prospective randomized trial of postoperative adjuvant therapy in patients with completely resected stage II and stage IIIa non-small cell lung cancer, RTOG 91-05
1994	CID92-199	Phase III randomized study of all-trans retinoic acid vs cytosine arabinoside and daunorubicin as induction therapy for patients with previously untreated acute promyelocytic leukemia, SWOG 2911
1994	CID91-128	Study of the biological behavior of optic pathway tumors, POG 8935
1994	CID0053	Prospective randomized phase III clinical trial evaluating the use of postoperative adjuvant radiotherapy in the treatment of patients with cutaneous melanoma of the head and neck, RTOG 93-02
1994	CID94-121	Letrozole (CGS 20267) comparison of two doses (0.5 mg and 2.5 mg) of letrozole (CGS 20267) vs megestrol acetate in postmenopausal women with advanced breast cancer, protocol 02 - F.A.C.T.
1994	CID94-117	Open, uncontrolled study of Demadex to evaluate the distribution of doses required in patients with congestive heart failure

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
1994	CID93-172	Hemodynamic consequences of colonoscopy in patients with aortic stenosis
1994	CID94-073	Phase III trial of r-Hu GM-CSF in patients with febrile neutropenia following cancer chemotherapy
1994	CID94-074	Double-blind, randomized, parallel sotalol-controlled, dose confirmation study to evaluate the safety and electrophysiologic effects of MK-499 in patients with sustaining ventricular tachyarrhythmias - (F.A.C.T.)
1994	CID94-100	Phase II study (A9303): Intravesical AD 32 in patients with transitional cell carcinoma of the bladder - F.A.C.T.
1994	CID94-102	Phase II study (A9301): Intravesical AD 32 in patients with carcinoma in situ of the bladder who have failed or have recurrence following treatment with BCG
1994	CID94-140	Randomized, double-blind study of orally administered dofetilide and placebo in patients with an implanted arrhythmia control device - F.A.C.T.
1994	CID94-115	Preoperative cardiovascular risk assessment in patients undergoing surgery for peripheral vascular disease
1994	CID94-135	SWOG #9321, Standard Dose Versus Myeloablative Therapy for Previously Untreated Symptomatic Multiple Myeloma
1994	CID94-105	Phase III trial of Adriamycin vs Taxol vs Taxol plus Adriamycin plus G-CSF in metastatic breast cancer, intergroup, SWOG 9332
Unknown	CID7524	Chemo-immunotherapy in stages III & IV ovarian and endometrial carcionoma
Unknown	CID7523	Phase II study of large cell and adenocarcinoma of the lung
Unknown	CID7518	Preoperative combined adjuvant therapy of rectal carcinoma
Unknown	CID0468	Comparison of myocardial adenyl cyclase activity and contractility in response to normothermic ischemic arrest
Unknown	CID7611	Cis-platinum refractory sarcomas, phase II
Unknown	CIDS-2	Automatic data processing - cardiovascular operations (Apr/87)
Unknown	CIDS-11-71	Development and testing of a new type of aortic and mitral valve prosthesis
Unknown	CIDV-3-73	Transcathether therapeutic embolization

AIR FORCE 1975-1994 (CONTINUED)

Wilford Hall Air Force Hospital/Medical Center, Lackland AFB, TX (continued)

Start Date	Number	Title
Unknown	CIDS-7716	Tamoxifen in renal cell carcinoma
Unknown	CIDS-7636	Hexamethylmelamine in advanced breast cancer
Unknown	CIDS-7611	Cis-platinum for refractory sarcomas, phase II
Unknown	CIDS-7525	Adjuvant testicular protocol stage Ib & II non-seminomatous tumors
Unknown	CID7756G	Evaluation of the perineum as a source of dermatophytosis
Unknown	CID7756E	Evaluation of standard and newer techniques of transcutaneous peripheral blood flow estimation
Unknown	CID7756D	Evaluation of electrovaginography as a means of determining estrogen effect

Wright-Patterson AFB Medical Center, OH

Start Date	Number	Title
1975	AF0009	Phase III evaluation of technetium-99m electrolytically labeled human serum albumin
1979	AF0088	Comprehensive study of Wilson's disease and human copper metabolism. One-time use of copper-64 for study of enzymatic defect of Wilson's disease

ARMY 1975-1994

Army Research Institute of Environmental Medicine, Natick, MA

Start Date	Number	Title
1985	MRDC002	Blood volume expansion and hypohydration
1988	MRDC003	Interaction of aerobic fitness and the hypohydration response during exercise-heat stress
1989	MRDC004	Role of thermal factors for metabolic adaptations to physical training
1991	MRDC006	Hyperhydration with a glycerol solution: Effects on fluid and electrolyte balance during rest and cold/exercise exposure
1992	MRDC031	Interaction of hypohydration and metabolic intensity on thermoregulatory responses during exercise-heat stress
1993	MRDC005	Interaction of hydration and metabolic intensity on thermoregulatory responses during exercise-heat stress
1993	MRDC007	Effects of autologous erythrocyte infusion in sea-level residents rapidly transported to high altitude

Brooke Army Medical Center, Fort Sam Houston, TX

Start Date	Number	Title
1975	ACIR75000-G	Gallium-67 citrate for intravenous administration (NEN) NEN = New England Nuclear
1975	ACIR75000-E	Approval of iodine-123 labeled rose bengal orthoiodohippurate
1975	ACIR75000-V	Clinical evaluation of indium-111 bleomycin
1975	ACIR75000-R	Clinical evaluation of indium-111 bleomycin (MPI Tumor Scintigraphin TM)
1975	ACIR75000-J	Treatment of patients for early testicular cancer with irradiation and chemotherapy with vinblastine and bleomycin, SWOG 7525
1975	ACIR75000-I	5-FU, meCCNU + radiotherapy with or without testolactone for localized adenocarcinoma of the exocrine pancreas, SWOG 7509
1976	ACIR76000-K	NEN 99m-Tc stannous glucoheptonate for intravenous administration
1976	ACIR76000-J	MPI 99m-Tc dimercaptosuccinic acid for intravenous administration

ARMY 1975-1994 (CONTINUED)

Brooke Army Medical Center, Fort Sam Houston, TX (continued)

Start Date	Number	Title
1976	ACIR76000-D	Bone scanning as a method for detecting early renal osteodystrophy
1976	ACIR76000-V	Combined preoperative adjuvant therapy in rectal carcinoma, SWOG 7618
1976	ACIR76000-Y	Treatment of early squamous cell carcinoma of the head and neck with chemotherapy or chemoimmunotherapy following initial surgery and/or radiotherapy, SWOG 7620
1976	ACIR76000-U	Combined chemotherapy/radiation therapy/immunotherapy for small cell (oat cell) carcinoma of the lung, phase III, SWOG 7628
1977	ACIR77000-T	Radiation therapy with BCNU, DTIC, or procarbazine in malignant brain gliomas (phase III)
1977	ACIR77000-K	Effect of radiotherapy on regional lung function in patients with bronchogenic cancer
1978	ACIR78000-E	Radiotherapy-chemotherapy (MOPP) for stages I and II a and b Hodgkin's, SWOG 7811
1978	ACIR78000-L	Concurrent chemotherapy - radiation therapy of selected head and neck cancer, SWOG 7863
1978	ACIR78000-J	Noninvasive radioisotope measurement of esophageal acid clearance. Tc-99m sulphur colloid
1978	ACIR78000-I	Therapy with celiac artery infusion 5-fluorouracil plus radiation therapy followed by mitomycin-C and 5-fluorouracil maintenance chemotherapy for treatment of localized adenocarcinoma of the exocrine pancreas, SWOG 7861
1978	ACIR78000-G	Technetium-99m pyridoxylidene glutamate (99m-Tc-PG) for diagnosis of hepatobiliary disease (1978)
1978	ACIR78000-D	Radioisotopic esophageal clearance test
1978	ACIR78000-K	Adjuvant therapy of soft tissue sarcomas with radiation therapy vs. combination therapy, SWOG 7802
1979	ACIR79000-D	Technetium-99m sulfur colloid particles
1979	ACIR79289	Treatment of early squamous cell carcinoma of the head and neck with initial surgery and/or radiotherapy followed by chemotherapy vs no further treatment, SWOG 7965

ARMY 1975-1994 (CONTINUED)

Brooke Army Medical Center, Fort Sam Houston, TX (continued)

Start Date	Number	Title
1979	ACIR79303	Randomized comparison of melphalan vs intraperitoneal chromic phosphate in the treatment of women with stage I epithelial carcinoma of the ovary
1979	ACIR79470	Randomized study of radiation therapy vs. pelvic node resection for patients with invasive squamous cell carcinoma of the vulva having positive groin nodes, GOG 37
1979	ACIR79000-A	Distribution and control of peripheral blood flow following extensive leg surface injury
1980	ACIR80547	Technetium-99m diethyl-IDA for diagnosis of hepatobiliary and gall bladder pathology
1980	ACIR80540	Surgical pathological study of women with invasive carcinoma of the cervix, stage Ib, randomly assigned radiation vs no further therapy in selected patients
1980	ACIR80282	Radiation therapy in combination with CCNU in patients within completely resected gliomas of the brain, grade I and II
1980	ACIR80625	Intravenous administration of 131-I (NP-59) for adrenal evaluation and imaging [Study terminated at LAMC because of base closing]
1980	ACIR80641	Randomized study of Adriamycin as an adjuvant after surgery and radiation therapy in patients with high risk endometrial carcinoma, stage I and occult stage II
1980	ACIR80635	Treatment of women with cervical cancer stage IIb, IIIb, IVa, confined to the pelvis and/or para-aortic nodes with radiotherapy alone vs radiotherapy plus immunotherapy (phase II)(IV C. parvum - a killed germ)
1981	ACIR81448	Comparison of involved field (IF) radiotherapy and MOPP + low bleomycin with IF radiography and A-COPP in stage III Hodgkin's disease
1981	ACIR81000-F	Evaluation of indomethacin as a protective agent against radiation-induced esophagitis
1981	ACIR81254	Radiotherapy with and without chemotherapy for malignant mesothelioma localized to one hemithorax, phase III (intergroup mesothelioma study 1), SWOG 8094
1981	ACIR81000-B	Clinical evaluation of cisternography utilizing 111-indium DTPA (diethylenetriamine pentaacetic acid)

ARMY 1975-1994 (CONTINUED)

Brooke Army Medical Center, Fort Sam Houston, TX (continued)

Start Date	Number	Title
1981	ACIR81258	Comparison of gray-scale ultrasonography and computed tomography with infusion nephrotomography in early diagnosis of adult-type polycystic kidney disease
1981	ACIR81255	Effect of propranolol on cardiac ejection fractions as determined by gated scans in thyrotoxic patients
1981	ACIR81147	Evaluation of young amateur boxers by computed tomography
1981	ACIR81024	Adjuvant intrahepatic chemotherapy with mitomycin-C and 5-fluorouracil combined with hepatic radiation in high risk patients with carcinoma of the colon, phase II pilot, SWOG 8066
1982	ACIR82465	Treatment of advanced seminoma (stage cII (n4) + cIII) with combined chemotherapy and radiation therapy, phase II, SWOG 8104
1982	ACIR82578	Ionizing radiation exposure of emergency room personnel
1982	ACIR82449	Evaluation of radiation exposure to personnel during cardiac catheterization
1982	ACIR82474	Evaluation of sodium ipodate as an adjunctive therapy to radioactive iodine for Graves' hyperthyroidism
1982	ACIR82084	Randomized comparison of hydroxyurea vs misonidazole as an adjunct to radiation therapy in patients with stage IIb, III and IVa carcinoma of the cervix and negative para-aortic nodes, GOG 56
1982	ACIR82627	Concurrent chemo-radiotherapy for limited small cell carcinoma of the lung, phase II - pilot
1982	ACIR82000-E	Clinical evaluation of the thyroid by in-vivo radionuclidic studies utilizing iodine-123
1983	ACIR83152	Treatment of squamous cell lung cancer with VP-16/cis-platinum alternating with vincristine/Adriamycin/cyclophosphamide and radiation vs concurrent VP-16/ vincristine/Adriamycin/cyclophosphamide and radiation, phase III, SWOG 8232
1983	ACIR83017	Treatment of acute non-lymphocytic leukemia with conventional induction, consolidation chemotherapy: Maintenance with chemotherapy versus bone marrow transplantation following total body irradiation, phase III
1983	ACIR83111	Combined modality therapy for multiple myeloma VMCP-VBAP for remission induction therapy: VMCP + levamisole vs sequential half-body radiotherapy + vincristine-prednisone, SWOG 8229

ARMY 1975-1994 (CONTINUED)

Brooke Army Medical Center, Fort Sam Houston, TX (continued)

Start Date	Number	Title
1983	ACIR83224	Prospective evaluation of clinical, x-ray, histologic, scintigraphic and microbiologic characteristics of diabetic feet (a multicenter study)
1983	ACIR83558	Comparison of aggressive radiotherapy plus chemotherapy vs aggressive chemotherapy in the treatment of limited carcinoma of the pancreas, phase III
1983	ACIR83421	Combined radiation therapy and chemotherapy as adjuvant treatment for Duke's B and C colon cancer, phase I - II, SWOG 8263
1983	ACIR83585	Whole brain irradiation and intrathecal methotrexate in the treatment of solid tumor leptomeningeal metastases, phase II, SWOG 8102
1983	ACIR83004	Evaluation of indium oxine In-111 labeled cellular blood components
1984	ACIR84344	Comprehensive therapy for Ewing's sarcoma: Tailored vs standard radiation therapy
1984	ACIR84255	Treatment of advanced bladder cancer with preoperative irradiation and radical cystectomy versus radical cystectomy alone, phase III
1984	ACIR84211	Dipyridamole MUGA studies compared with quantitative tomographic stress and dipyridamole infusion Tl-201 scintigrams for assessing coronary artery disease
1984	ACIR84495	Assessment of radiocontrast induced acute renal failure following coronary angiography: An evaluation of intravenous mannitol infusion as a preventive measure
1984	ACIR84002	Treatment for locally advanced non-small cell lung cancer: Radiation therapy plus cis-platinum and VP-16, a pilot study
1984	ACIR84494	Value of preoperative sulfur colloid marrow scintigraphy in the treatment of acute fractures of the femoral neck
1985	ACIR85556	Treatment of patients with sub-optimal ('bulky') stage Ib carcinoma of the cervix: A randomized comparison of radiation therapy versus radiation therapy plus adjuvant extrafascial hysterectomy (phase III), GOG 71
1985	ACIR85239	Post-radiotherapy overt and occult constrictive pericarditis in patients post-mediastinal radiotherapy: Evaluation by micromanometric hemodynamics, pulsed Doppler echocardiography, & right ventricular endomyocardial biopsy
1985	ACIR85244	Combination chemotherapy (COPE) and radiation therapy for extensive small cell lung cancer, phase II - pilot

ARMY 1975-1994 (CONTINUED)

Brooke Army Medical Center, Fort Sam Houston, TX (continued)

Start Date	Number	Title
1985	ACIR85551	Simultaneous cis-platinum + radiation therapy compared with standard radiation therapy in the treatment of unresectable squamous or undifferentiated carcinoma of the head and neck, phase III
1985	ACIR85405	Platelet deposition at coronary angioplasty sites: Effect of an anti-platelet regimen and predictive value of platelet scanning
1985	ACIR85562	Postoperative pelvic radiation in stage I & II mixed mesodermal sarcoma of the uterus, GOG 75
1985	ACIR85564	Phase III study to determine the effect of combined chemotherapy with surgery and radiotherapy for resectable squamous cell carcinoma of the head and neck, SWOG 8590
1985	ACIR85064	Treatment of limited non-small cell lung cancer: Radiation versus radiation plus chemotherapy (FOMI/CAP), phase III, SWOG 8300
1985	ACIR85217	Radiation therapy + 5-fluorouracil vs sandwich SMF chemotherapy + radiation therapy as adjuvant surgical treatment of pancreatic cancer, phase III-intergroup, SWOG 8492
1986	ACIR86539	Treatment of limited small cell cancer with concurrent chemotherapy, radiotherapy, and intensification with high dose cyclophosphamide, SWOG 8573
1986	ACIR86468	Intensive chemotherapy (MOPP-ABVD) plus low-dose total nodal radiation therapy in the treatment of stages IIb, IIIa2, IIIb, and IV Hodgkin's disease in pediatric patients, a groupwide pilot study
1986	ACIR86434	Phase III trial comparing combination chemotherapy with whole abdominal radiation therapy for stage III optimal epithelial ovarian cancer with no gross residual disease or gross residual disease < or equal to 1 cm
1986	ACIR86619	Treatment of hepatoblastoma with surgery, chemotherapy, and radiation therapy, POG 8696
1986	ACIR86520	Evaluation of I-123 iofetamine HCL in brain scanning
1986	ACIR86041	Assessment of the value of brain scans (BS) and computerized axial tomograph (CT scans) in the management of patients with transient ischemic attacks (TIAs) and cerebral infarcts with transient signs (CITS)
1986	ACIR86571	Randomized phase III intergroup study of radiation therapy versus cisplatin plus etoposide plus bleomycin for advanced stage II seminoma, SWOG 8596

ARMY 1975-1994 (CONTINUED)

Brooke Army Medical Center, Fort Sam Houston, TX (continued)

Start Date	Number	Title
1986	ACIR86612	Intensive chemotherapy, delayed local irradiation, total body irradiation, total body irradiation and autologous bone marrow rescue in treating high risk Ewing's sarcoma
1986	ACIR86616	Intra-arterial cis-platinum and radiation therapy in primary brain tumors: A phase II randomized study comparing sequential and combined treatments
1986	ACIR86115	Trial of local irradiation and chemotherapy versus chemotherapy alone for the treatment of localized non-Hodgkin's lymphoma, POG 8314
1987	ACIR87047	Randomized study of radical vulvectomy and bilateral groin disease dissection versus radical vulvectomy and bilateral groin radiation, GOG 88
1987	ACIR87345	Treatment of children 3 years of age with malignant brain tumors using postoperative chemotherapy and delayed irradiation, POG 8633
1987	ACIR87367	Prospective trial for localized cancer of the esophagus: Comparing radiation as a single modality to the combination of radiation and chemotherapy, phase III
1987	ACIR87584	Evaluation of intraperitoneal chromic phospate suspension therapy following negative second-look laparotomy for epithelial ovarian carcinoma (stage III), phase III, GOG 93
1987	ACIR87480	Randomized phase III intergroup study of supradiaphragmatic irradiation in stage IIa seminoma (RTOG 8514/intergroup 0055) - SWOG 8597
1987	ACIR87471	Role of routine radiographs in the evaluation of acute knee complaints in emergency department
1987	ACIR87344	Medullobastoma favorable prognosis: Randomized study of reduced dose irradiation to brain and spinal contents versus standard dose irradiation, POG 8631
1987	ACIR87581	Randomized comparison of hydroxyurea versus 5-FU infusion and bolus cisplatin as an adjunct to radiation therapy in patients with stages IIb, III, and IVa carcinoma of the cervix and negative para-aortic nodes, GOG 85
1988	MRDC016	Study of salt and water balance and hormonal responses following burn injury
1988	ACIR88037	Treatment of stage III and IV disease of advanced endometrial carcinoma and all stages of papillary serous carcinoma and clear cell carcinoma of the endometrium with total abdominal radiation therapy, GOG 94

ARMY 1975-1994 (CONTINUED)

Brooke Army Medical Center, Fort Sam Houston, TX (continued)

Start Date	Number	Title
1988	ACIR88135	Phase III randomized study of adjunctive radiation therapy in intermediate risk endometrial adenocarcinoma, GOG 99
1988	ACIR88520	Treatment of localized non-Hodgkin's lymphoma: Comparison of chemotherapy (CHOP) to chemotherapy plus radiation therapy, SWOG 8736
1988	ACIR88597	Prospective analysis of cardiac changes related to radiation therapy
1988	ACIR88600	Consolidation therapy with high-dose cyclophosphamide and total body irradiation, followed by autologous marrow infusion in metastatic breast cancer, SWOG 8700
1988	ACIR88604	Evaluations of operable bladder cancer patients with preoperative irradiation + 5-FU alone, phase II, a pilot study for patients ineligible for..., SWOG 8710
1988	ACIR88608	Randomized study of intensive chemotherapy (MOPP/ABVD) +/- low dose total nodal radiation therapy in the treatment of stages IIb, IIIa2, IIIb, and IV Hodgkin's disease in pediatric patients
1988	ACIR88613	Pre-radiation chemotherapy in the treatment of children with brain stem tumors - a phase II study
1989	ACIR89791	Low-grade glioma phase III: Surgery and immediate radiotherapy vs surgery and delayed radiotherapy, SWOG 8891
1989	ACIR89794	Acute serum potassium elevation after intravenous hypertonic contrast in patients with normal, impaired, and absent renal function
1989	ACIR89632	Treatment of limited small cell lung cancer with concurrent chemotherapy, radiotherapy, with or without GM-CSF and subsequent randomization to maintenance interferon or no maintenance
1989	ACIR89630	Neoadjuvant cisplatin and VP-16 plus concurrent chest and optional brain irradiation for patients with stage III non-small cell lung carcinoma, a phase II pilot
1989	ACIR89453	Assessment of revascularization via coronary artery bypass grafting by dipyridamole-thallium scintigraphy
1989	ACIR89283	Evaluation of interstitial lymphoscintigraphy with radioactive technetium antimony trisulfide colloid (99m-Tc-Sb2S3) for lymphoma, internal mammary and excised malignant melanoma lymphoscintigraphy
1989	ACIR89138	Surgical adjuvant therapy of rectal carcinoma: A) controlled evaluation of a protracted infusion of 5-fluorouracil as a radiation enhancer and, b) 5-FU plus methyl-CCNU chemotherapy, SWOG 8896

ARMY 1975-1994 (CONTINUED)

Brooke Army Medical Center, Fort Sam Houston, TX (continued)

Start Date	Number	Title
1989	ACIR89089	Pilot study: Evaluation of the effects of treatment with 0.075 topical capsaicin in patients with reflex sympathetic dystrophy using three phase bone scintigraphy (protocol no. 1015-890-03)
1989	ACIR89040	Evaluation of 131-I-MIBG (131-I-metaiodobenzylguanidine sulfate) in patients suspected of having pheochromocytoma, paraganglioma, or medullary hyperplasia
1989	ACIR89431	Pre-irradiation combination chemotherapy with cisplatin and ara-C for children with incompletely resected supratentorial malignant tumors: A phase II study
1989	ACIR89795	Shoulder impingement syndrome: Response to conservative treatment and the predictive value of some associated clinical and radiographic findings
1990	MRDC001	Clinical study of the efficacy of low-dose dopamine therapy in hospitalized burn patients
1990	ACIR90322	Controlled, covariate analysis of radical prostatectomy versus radiation therapy for adenocarcinoma of the prostate
1990	ACIR90721	High dose etoposide, cyclophosphamide and either fractionated total body irradiation or carmustine combined with autologous bone marrow rescue for refractory or relapsed non-Hodgkin's lymphoma, SWOG 8942
1990	ACIR90689	Treatment of children with high stage medulloblastoma: Cisplatin/VP-16 pre-vs post-irradiation: A POG phase III study
1990	ACIR90633	Treatment of pathologic stage C carcinoma of the prostate with adjuvant radiotherapy
1990	ACIR90619	Evaluation of intraperitoneal chromic prosphate suspension, GOG 93
1990	ACIR90618	Treatment of selected patients with stage Ib carcinoma of the cervix after radical hysterectomy and pelvic lymphadenectomy: Pelvic radiation therapy versus no further therapy, GOG 92
1990	ACIR90617	Randomized comparison of hydroxyurea versus 5-FU infusion and bolus cisplatin as an adjunct to radiation therapy in patients with stages IIb, III, and IVa carcinoma of the cervix and negative para-aortic nodes
1990	ACIR90494	Radical prostatectomy versus radiation therapy for clinical stage A2 and B adenocarcinoma of the prostate (NO MO), SWOG 8890
1990	ACIR90305	Prostaglandin excretion in radiocontrast induced acute renal failure

ARMY 1975-1994 (CONTINUED)

Brooke Army Medical Center, Fort Sam Houston, TX (continued)

Start Date	Number	Title
1990	ACIR90281	Phase I evaluation of multiple daily fraction radiation and 5-fluorouracil plus cisplatin in stage IIb, III, and IVa carcinoma of the cervix with negative para-aortic nodes
1990	ACIR90249	Evaluation of radiation treatment following surgical resection of solitary brain metastasis
1990	ACIR90722	High dose etoposide, cyclophosphamide, and either fractionated total body irradiation or carmustine combined with autologous bone marrow rescue for refractory or relapsed Hodgkin's disease, SWOG 9011
1990	ACIR90724	Phase II study of whole abdominal radiation in stage I and II papillary serous carcinoma, GOG 94
1990	ACIR90615	Feasibility trial of postoperative radiotherapy and cisplatin followed by three courses of 5-FU and cisplatin in patients with resected head and neck cancer, phase II pilot, SWOG 8957
1991	ACIR91060	Study of radiotherapy with or without concurrent cisplatin in patients with nasopharyngeal cancer, phase III
1991	ACIR91207	Changes in hepatocyte function measured by technetium Tc-99m mebrofenin
1991	ACIR91577	Dose-escalating study of cisplatin used concomitantly with hyperfractionated irradiation in the treatment of children with newly-diagnosed brain stem gliomas, POG 9139
1991	ACIR91204	High-dose cytosine arabinoside, fractionated total body irradiation, and autologous bone marrow transplantation in patients with acute lymphoblastic leukemia in second hematologic remission: A phase II study
1991	ACIR91677	Phase I/II dose escalating trial of hyperfractionated irradiation in the treatment of supratentorial malignant tumors of childhood
1991	ACIR91515	Phase I evaluation of multiple daily fraction radiation and hydroxyurea in stage IIb, III, and IVa carcinoma of the cervix with negative para-aortic nodes
1991	ACIR91704	Comparison of exercise Tc-99m sestamibi myocardial scintigraphy and adenosine Tc-99m sestamibi myocardial scintigraphy for the diagnosis of coronary artery disease in patients with left bundle branch block
1992	ACIR92184	Randomized comparison of radiation therapy and adjuvant hysterectomy vs radiation therapy and weekly cisplatin and adjuvant hysterectomy in patients with bulky stage Ib carcinoma of the cervix, phase III

ARMY 1975-1994 (CONTINUED)

Brooke Army Medical Center, Fort Sam Houston, TX (continued)

Start Date	Number	Title
1992	ACIR92689	Comparison of film screen radiography, computer radiography, and Kodak insight filmscreen in demonstrating mediastinal anatomy
1992	ACIR92439	Extended field radiation therapy with concomitant 5-FU infusion and cisplatin chemotherapy in patients with cervical carcinoma metastatic to para-aortic lymph nodes (phase II)
1992	ACIR92069	Postoperative radiotherapy for single brain metastases, phase III, SWOG 9021
1992	ACIR92441	Whole abdominal radiotherapy versus circadian-timed combination doxorubicin-cisplatin chemotherapy in advanced endometrial carcinoma
1992	ACIR92607	Randomized comparison of hydroxyurea vs hydroxyurea, 5-FU infusion & cisplatin vs weekly cisplatin as adjunct to radiation therapy in patients with stages IIb, III, or IVa carcinoma of cervix and negative para-aortic nodes
1992	ACIR92070	Study of external brain irradiation and cisplatin/BCNU followed by BCNU for the treatment of primary malignant brain tumor, phase II
1992	ACIR92066	Randomized comparison of 5-FU infusion and bolus cisplatin vs weekly cisplatin as adjunction to radiation therapy in patients with stages IIb, IIIa, IIIb, and IVa carcinoma of the cervix and negative para-aortic nodes, GOG 120
1993	ACIR93352	Myocardial imaging utilizing positron emission tomography to detect and assess coronary artery disease
1993	ACIR93348	Evaluation of radionuclide angiography and echocardiography for assessment of doxorubicin induced ventricular dysfunction
1993	ACIR93304	Randomized trial of subtotal nodal irradiation versus doxorubicin plus vinblastine and subtotal nodal irradiation for stage I-IIa Hodgkin's disease, phase III
1993	ACIR93436	High-dose chemotherapy and total body irradiation with autologous stem cell support and alpha interferon consolidation in the treatment of patients with non-Hodgkin's lymphoma with a poor prognosis
1993	ACIR93369	Measurement of o 6 mgmt in patients with high grade primary brain tumors treated with radiation therapy and BCNU, ancillary study, SWOG 9218
1994	ACIR94322	Trial of adjuvant chemoradiation after gastric resection for adenocarcinoma, phase II

ARMY 1975-1994 (CONTINUED)

Dwight D. Eisenhower Army Medical Center, Fort Gordon, GA

Start Date	Number	Title
1978	ACIR78000-N	Prevention of gonadal damage in men treated with combination chemotherapy/ radiotherapy for Hodgkin's disease and non-Hodgkin's lymphomas. Addendum 1 to WRAMC 7810
1980	ACIR80202	Prevention of gonadal damage in women treated with combination chemotherapy or radiotherapy below the diaphragm for Hodgkin's or non-Hodgkin's lymphoma
1980	ACIR80282	Radiation therapy in combination with CCNU in patients within completely resected gliomas of the brain, grade I and II
1982	ACIR82098	Predictive ability of body CT scan
1983	ACIR83346	Treatment of small cell lung cancer with VP-16/cis-platinum, alternating with vincristine/Adriamycin/cyclophosphamide and radiation vs concurrent VP-16/ vincristine/Adriamycin/cyclophosphamide and radiation, phase III
1983	ACIR83559	Combined therapy for multiple myeloma, VMCP-VBAP for remission: VMCP + levamisole vs sequential half-body radiation + vincristine-prednisone for patients who fail to achieve remission status with chemotherapy alone, phase III
1983	ACIR83585	Whole brain irradiation and intrathecal methotrexate in the treatment of solid tumor leptomeningeal metastases, phase II, SWOG 8102
1983	ACIR83017	Treatment of acute non-lymphocytic leukemia with conventional induction, consolidation chemotherapy: Maintenance with chemotherapy versus bone marrow transplantation following total body irradiation, phase III
1984	ACIR84229	Intergroup mesothelioma study 1 - radiotherapy with and without chemotherapy for malignant mesothelioma localized to one hemithorax, phase III, SWOG 8094
1984	ACIR84410	Treatment for brain metastases, phase III, intergroup study (surgery and/or radiation therapy), SWOG 8292
1984	ACIR84399	Comparison of aggressive radiotherapy + chemotherapy vs aggressive chemotherapy in the treatment of limited carcinoma of the pancreas, phase III
1985	ACIR85064	Treatment of limited non-small cell lung cancer: Radiation versus radiation plus chemotherapy (FOMI/CAP), phase III, SWOG 8300
1987	ACIR87372	Effect of oral hydration on bone-to-soft tissue ratio and subjective scan interpretation in Tc-99m medronate bone scans

ARMY 1975-1994 (CONTINUED)

Dwight D. Eisenhower Army Medical Center, Fort Gordon, GA (continued)

Start Date	Number	Title
1987	ACIR87367	Prospective trial for localized cancer of the esophagus: Comparing radiation as a single modality to the combination of radiation and chemotherapy, phase III
1988	ACIR88289	Distal thigh pain and stress transfer in uncemented total hip arthroplasties. A scintigraphic analysis
1989	ACIR89080	Assessment of subclinical contrast nephropathy using urinary adenosine deaminase binding protein
1989	ACIR89005	Stress radiography in the detection of shoulder instability
1989	ACIR89811	Correlation of clinical hip examination findings with scintigraphic and radiographic results in Army trainees with hip pain performed at Fort Jackson
1990	ACIR90103	Technetium 99m antimony trisulfide colloid for investigation of lymphatic drainage
1990	ACIR90471	In vitro labeling of red blood cells with technetium-99m utilizing a pre-prepared 'kit'
1990	ACIR90516	Relationship of the sense of coherence and hardiness to the nutritional status of anorectic head and neck cancer patients currently undergoing radiation therapy
1991	ACIR91316	Treatment of limited small cell lung cancer with concurrent chemotherapy, radiotherapy, with or without GM-CSF and subsequent randomization to maintenance interferon or no maintenance, SWOG 8812
1991	ACIR91456	Stability of technetium sulfur colloid labeled egg substitute in gastric acid: Comparison to in vivo labeled chicken liver
1991	ACIR91457	Adrenal imaging with 131-iodine 6-beta-iodomethyl-norcholesterol (NP-59)
1991	ACIR91153	Scintigraphy of tumors of neuroectodermal origin with 131-iodine-metaiodobenzylguanidine sulfate (131-I MIBG)
1991	ACIR91460	Treatment of localized non-Hodgkin's lymphoma: Comparison of chemotherapy (CHOP) to chemotherapy plus radiation therapy
1992	ACIR92123	Trial of adjuvant chemoirradiation after gastric resection for adenocarcinoma, phase III, SWOG 9008
1992	ACIR92662	Evaluation of the use of 99m-technetium pertechnetate with potassium perchlorate wash-out and 99m-technetium MIBI in parathyroid imaging in patients with suspected parathyroid neoplasia or hyperplasia

ARMY 1975-1994 (CONTINUED)

Dwight D. Eisenhower Army Medical Center, Fort Gordon, GA (continued)

Start Date	Number	Title
1992	ACIR92369	Clinical study of the relationship between computed tomography and bone sounding
1992	ACIR92477	Cisplatin plus etoposide combined with standard fractionation thoracic radiotherapy vs cisplatin plus etoposide combined with multiple daily fractionated thoracic radiotherapy for limited stage small cell lung cancer, SWOG 8991
1992	ACIR92658	Comparison of standard radiotherapy vs radiotherapy plus cisplatin, vs split-course radiotherapy plus simultaneous cisplatin and 5-FU, in patients with unresectable squamous cell carcinoma of head & neck, SWOG 9059
1993	ACIR93159	Phase III trial to preserve the larynx: Induction chemotherapy and radiation therapy versus concomitant chemotherapy and radiation therapy versus radiation, SWOG 9201
1993	ACIR93304	Randomized trial of subtotal nodal irradiation versus doxorubicin plus vinblastine and subtotal nodal irradiation for stage I-IIa Hodgkin's disease, phase III
1993	ACIR93003	Comparative study of liver biopsies and quantitative hepatobiliary scanning in patients with hepatitis C
1994	ACIR94158	Phase II evaluation of cisplatin + 5-FU + radiation therapy in patients with locally advanced/inoperable bladder cancer, SWOG 9312
1994	ACIR94109	Conservative treatment of adenocarcinoma of the distal rectum: Local resection plus adjuvant 5-FU/radiation therapy, a phase II intergroup study, SWOG 9306
1994	ACIR94108	Phase III study of radiation therapy, levamisole and 5-fluorouracil versus 5-fluorouracil and levamisole in selected patients with completely resected colon cancer, SWOG 9303

Fitzsimons Army Medical Center, Aurora, CO

Start Date	Number	Title
1978	ACIR78000-F	CNS tumor protocol for study of combined surgery, chemotherapy, and radiotherapy
1980	ACIR80414	Intravenous administration of 131-I 6B-iodomethylnorcholesterol (NP-59) for adrenal evaluation and imaging

ARMY 1975-1994 (CONTINUED)

Fitzsimons Army Medical Center, Aurora, CO (continued)

Start Date	Number	Title
1980	ACIR80525	Study of women with invasive carcinoma of the cervix; stage Ib and study of radiation therapy in patients with positive lymph nodes, GOG 49
1980	ACIR80282	Radiation therapy in combination with CCNU in patients within completely resected gliomas of the brain, grade I and II
1980	ACIR80252	Technetium 99m p-isopropylacetanilidoiminoacetic acid (99m-Tc-pipIDA) for diagnosis of hepatobiliary disease
1980	ACIR80512	Treatment of women with cervical cancer stage IIb, IIIb, and IVa confined to the pelvis and/or para-aortic nodes with radiotherapy versus radiotherapy plus immunotherapy, GOG 24
1980	ACIR80516	Randomized study of Adriamycin after surgery and radiation therapy in patients with high risk endometrial carcinoma stage I and occult stage II, GOG 34
1980	ACIR80264	Study of coagulation parameters prior to and following intravenous injection of radiographic contrast media
1981	ACIR81281	Treatment of early squamous cell carcinoma of the head and neck with initial surgery and/or radiotherapy followed by chemotherapy vs no further treatment, SWOG 7925
1981	ACIR81268	Radiation therapy in combination with BCNU, DTIC, or procarbazine in patients with malignant gliomas of the brain, SWOG 7703
1981	ACIR81178	Multimodal therapy of metastatic Ewing's sarcoma with chemotherapy including Adriamycin, vincristine, cyclophosphamide, 5-fluorouracil, actinomycin-D plus irradiation and surgery, intergroup Ewing's sarcoma study, phase III
1981	ACIR81448	Comparison of involved field (IF) radiotherapy and MOPP + low bleomycin with IF radiography and A-COPP in stage III Hodgkin's disease
1982	ACIR82536	Pharmacologic attempts of bone suppression in 99m-Tc pyrophosphate myocardial scanning
1982	ACIR82368	Extended field radiation therapy and hydroxyurea (NSC 032065) followed by randomized cisplatin (NSC 119875) or no further therapy in patients with cervical squamous cell carcinoma metastatic to lymph nodes (phase III), GOG 59
1982	ACIR82124	Randomized double blind clinical trial evaluation of cholestyramine prophylaxis for radiation-induced diarrhea, GOG 53

ARMY 1975-1994 (CONTINUED)

Fitzsimons Army Medical Center, Aurora, CO (continued)

Start Date	Number	Title
1982	ACIR82627	Concurrent chemo-radiotherapy for limited small cell carcinoma of the lung, phase II - pilot
1982	ACIR82699	Hepatoma III, treatment of hepatoblastoma and hepatocellular carcinoma (H-HCC) in children with surgery, radiation, and chemotherapy (phase III), POG 8103
1982	ACIR82126	Randomized comparison of hydroxyurea vs misonidazole as an adjunct to radiation therapy in patients with stage IIb, III, and IVa carcinoma of the cervix and negative para-aortic nodes, phase III, GOG 56
1983	ACIR83559	Combined therapy for multiple myeloma, VMCP-VBAP for remission: VMCP + levamisole vs sequential half-body radiation + vincristine-prednisone for patients who fail to achieve remission status with chemotherapy alone, phase III
1983	ACIR83043	Assessment of regional wall motion abnormalities by radionuclide angiography; effect of sublingual nitroglycerin. Tc-99m sulphur colloid
1983	ACIR83044	Gallium index: Qualitative vs quantitative analysis
1983	ACIR83585	Whole brain irradiation and intrathecal methotrexate in the treatment of solid tumor leptomeningeal metastases, phase II, SWOG 8102
1983	ACIR83346	Treatment of small cell lung cancer with VP-16/cis-platinum, alternating with vincristine/Adriamycin/cyclophosphamide and radiation vs concurrent VP-16/ vincristine/Adriamycin/cyclophosphamide and radiation, phase III
1983	ACIR83004	Evaluation of indium oxine In-111 labeled cellular blood components
1983	ACIR83332	Evaluation of indium oxine In-111 labeled cellular blood components
1983	ACIR83017	Treatment of acute non-lymphocytic leukemia with conventional induction, consolidation chemotherapy: Maintenance with chemotherapy versus bone marrow transplantation following total body irradiation, phase III
1983	ACIR83316	CT scan of medial meniscus tears of the knee
1983	ACIR83209	Multi-agent chemotherapy with adjuvant whole-body irradiation in half-body increments in patients with clinical group IV rhabdomysarcoma
1984	ACIR84041	Intergroup mesothelioma study 1 - radiotherapy with and without chemotherapy for malignant mesothelioma localized to one hemithorax, phase III, SWOG 8094

ARMY 1975-1994 (CONTINUED)

Fitzsimons Army Medical Center, Aurora, CO (continued)

Start Date	Number	Title
1984	ACIR84255	Treatment of advanced bladder cancer with preoperative irradiation and radical cystectomy versus radical cystectomy alone, phase III
1984	ACIR84399	Comparison of aggressive radiotherapy + chemotherapy vs aggressive chemotherapy in the treatment of limited carcinoma of the pancreas, phase III
1984	ACIR84036	Prospective evaluation of esophageal changes in patients undergoing esophageal radiation
1984	ACIR84043	Treatment of advanced seminoma with combined chemotherapy and radiation therapy, SWOG 8104
1984	ACIR84125	Postoperative pelvic radiation in stage I and II mixed mesodermal sarcomas of the uterus, GOG 75
1985	ACIR85398	Treatment of limited non-small cell lung cancer; radiation versus radiation plus chemotherapy (FOMI/CAP), phase III, SWOG 8300
1985	ACIR85165	Evaluation of computed tomography of the chest in changing the stage or treatment of patients with Hodgkin's disease
1985	ACIR85177	Phase III study to determine the effect of combining chemotherapy (cisplatin and 5-FU) with surgery and radiotherapy for resectable squamous cell carcinoma of the head and neck
1985	ACIR85187	Radiation therapy + 5-fluorouracil vs sandwich SMF chemotherapy + radiation therapy as adjuvant surgical treatment of pancreatic cancer, phase III - intergroup, SWOG 8492
1985	ACIR85400	Phase III simultaneous cis-platinum plus radiation therapy compared with standard radiation therapy in the treatment of unresectable squamous or undifferentiated carcinoma of the head and neck
1986	ACIR86468	Intensive chemotherapy (MOPP-ABVD) plus low-dose total nodal radiation therapy in the treatment of stages IIb, IIIa2, IIIb, IV Hodgkin's disease in pediatric patients, a groupwide pilot study
1986	ACIR86497	Lung cancer study group - phase II pilot program of concurrent chemotherapy and radiation therapy before surgery in patients with stage III non-small cell lung cancer, LCSG 852
1986	ACIR86545	Phase III trial comparing combination chemotherapy (CAP) with whole abdominal radiation therapy for stage III optimal epithelial ovarian cancer with no gross residual disease or gross residual disease less than 1 cm

ARMY 1975-1994 (CONTINUED)

Fitzsimons Army Medical Center, Aurora, CO (continued)

Start Date	Number	Title
1986	ACIR86643	Treatment of limited small cell lung cancer with concurrent chemotherapy, radiotherapy, and intensification with high dose cyclophosphamide, phase II pilot, SWOG 8573
1987	ACIR87027	Comparison of hydroxyurea versus cis-platinum and 5-FU as an adjunct to radiation therapy in patients with advanced carcinoma of the cervix, GOG 85
1987	ACIR87367	Prospective trial for localized cancer of the esophagus: Comparing radiation as a single modality to the combination of radiation and chemotherapy, phase III
1988	ACIR88240	Phase II study of whole abdominal radiation for stage I and II papillary serous carcinoma, GOG 94a
1988	ACIR88239	Radiation therapy vs. no further therapy in selected patients with stage Ib, invasive carcinoma of the cervix, GOG 92
1988	ACIR88472	Adjunctive radiation therapy in intermediate risk endometrial carcinoma, GOG 99
1988	ACIR88471	Evaluation of intraperitoneal chromic phosphate after negative second-look laparotomy in ovarian carcinoma (stage III), phase III, GOG 93
1988	ACIR88608	Randomized study of intensive chemotherapy (MOPP/ABVD) +/- low dose total nodal radiation therapy in the treatment of stages IIb, IIIa2, IIIb, and IV Hodgkin's disease in pediatric patients
1989	ACIR89632	Treatment of limited small cell lung cancer with concurrent chemotherapy, radiotherapy, with or without GM-CSF and subsequent randomization to maintenance interferon or no maintenance
1989	ACIR89176	Ventilatory effects of transtracheal oxygenation
1989	ACIR89757	Evaluation of preoperative chemoradiation for advanced vulvar cancer, GOG 101
1990	ACIR90633	Treatment of pathologic stage C carcinoma of the prostate with adjuvant radiotherapy
1990	ACIR90637	Study of chest irradiation plus concurrent daily low-dose cisplatin followed by high-dose consolidation for locally advanced non-small cell lung cancer, SWOG 8836
1990	ACIR90638	Intergroup, surgical adjuvant therapy of rectal carcinoma: A controlled evaluation of (a) protracted infusion of 5-fluorouracil as a radiation enhancer and (b) 5-fluorouracil plus methyl-CCNU chemotherapy, SWOG 8896

ARMY 1975-1994 (CONTINUED)

Fitzsimons Army Medical Center, Aurora, CO (continued)

Start Date	Number	Title
1990	ACIR90689	Treatment of children with high stage medulloblastoma: Cisplatin/VP-16 pre-vs post-irradiation: A POG phase III study
1990	ACIR90144	5-FU infusion and bolus cisplatin as adjunct to radiation therapy vs radiation alone in selected patients with stage Ia2, Ib, or IIa carcinoma of the cervix following radical hysterectomy and node dissection, GOG 109
1990	ACIR90602	Comparison of liver biopsy versus non-invasive testing using hepatic ultrasound, radionuclide scanning, erythrocyte folate levels, and methotrexate levels for the determination of methotrexate-induced hepatotoxicity
1991	ACIR91460	Treatment of localized non-Hodgkin's lymphoma: Comparison of chemotherapy (CHOP) to chemotherapy plus radiation therapy
1991	ACIR91060	Study of radiotherapy with or without concurrent cisplatin in patients with nasopharyngeal cancer, phase III
1991	ACIR91397	5-FU infusion and bolus cisplatin as an adjunct to radiation therapy vs radiation therapy alone in selected patients with stage Ia2, Ib, or IIa carcinoma of the cervix following radical hysterectomy and node dissection, GOG 109
1991	ACIR91595	Dose-escalating study of cisplatin, used concomitantly with hyperfractionated irradiation in the treatment of children with newly-diagnosed brain stem gliomas, a phase I study
1991	ACIR91676	Pre-radiation chemotherapy for children with supratentorial malignant gliomas and poorly differentiated embryonal tumors of childhood
1992	ACIR92704	Cisplatin plus etoposide combined with standard fractionation thoracic radiotherapy vs cisplatin plus etoposide combined with multiple daily fractionated thoracic radiotherapy for limited stage small cell lung cancer, SWOG 8991
1992	ACIR92590	Randomized comparison of radiation versus radiation plus continuous 5-fluorouracil infusion for palliation of bone metastases: Phase II study
1992	ACIR92707	Clinical and radiographic comparison of parenteral gold versus parenteral methotrexate in the treatment of early rheumatoid arthritis
1992	ACIR92385	Phase I/II dose-escalating trial of hyperfractionated irradiation in the treatment of supratentorial malignant tumors of childhood, POG 9136
1992	ACIR92383	Hyperfractionated irradiation for posterior fossa ependymoma

ARMY 1975-1994 (CONTINUED)

Fitzsimons Army Medical Center, Aurora, CO (continued)

Start Date	Number	Title
1992	ACIR92362	Feasibility trial of postoperative radiotherapy plus cisplatin followed by three courses of 5-FU plus cisplatin in patients with resected head and neck cancer, phase II pilot
1992	ACIR92232	Effect of smoking, alcohol ingestion, radiation therapy, and b-carotene on Langerhans cells in human oral mucosa: A pilot study
1992	ACIR92070	Study of external brain irradiation and cisplatin/BCNU followed by BCNU for the treatment of primary malignant brain tumor, phase II
1993	ACIR93357	Daily carboplatin and simultaneous accelerated, hyperfractionated chest irradiation followed by carboplatin in patients with inoperable (stages IIIa & IIIb) non-small cell lung cancer (coop study with U. Colorado Cancer Center & NCI)
1993	ACIR93358	Induction therapy with daily etoposide, daily cisplatin and simultaneous chest irradiation followed by consolidation cisplatin/etoposide therapy in limited stage small cell lung cancer (cooperative study with U. Colorado Cancer Center & NCI)
1993	ACIR93129	Strontium-89 therapy for intractable bone pain from metastatic breast and prostate cancer
1993	ACIR93367	Cisplatin and hyperfractionated versus conventional radiotherapy for brain stem glioma, POG 9239
1993	ACIR93079	Treatment of stage I, IIa, and IIIa1 Hodgkin's disease with ABVE and low-dose irradiation, POG 9226
1993	ACIR93339	Iodine-131 metaiodobenzylguanidine (MIBG) to rule out pheochromocytoma, one-time, emergency use
1993	ACIR93334	Phase III randomized trial of standard versus dose-intensified chemotherapy for children 3 years of age with a CNS malignancy treated with or without radiation therapy
1993	ACIR93563	Prospective evaluation of technetium-99m sestamibi in the detection of breast cancer
1993	ACIR93486	Comparison of three quality control methods used in the preparation of Tc-99m exametazine (Ceretec)
1994	ACIR94065	Protocol for evaluation of Cedars-Sinai and Emory algorithm for analysis of myocardial Tc-99m sestamibi tomographs

ARMY 1975-1994 (CONTINUED)

Lawrence Livermore National Laboratory, Livermore, CA

Start Date	Number	Title
1980	ACIR80503	Clinical trial of seven drug vs nine drug chemotherapy in extensive disease, and a seven drug with late consolidative radiotherapy in limited disease oat cell lung cancer, NCOG 2091

Letterman Army Medical Center, San Francisco, CA

1975	ACIR75000-U	BCNU and irradiation in the treatment of malignant glioma of the brain
1975	ACIR75000-P	Technetium-99m DTPA for the measurement of glomerular filtration rate and imaging of the kidneys and brain
1975	ACIR75000-N	Gallium-67 citrate for diagnosis of malignant neoplasms and/or abscess localizations
1976	ACIR76000-Q	Thallium-201 chloride for diagnosis of myocardial ischemia and/or myocardial infarction
1977	ACIR77000-R	Technetium-99m pyridoxylidene glutamate (99m-Tc-pg) for diagnosis of hepatobiliary disease (1977)
1980	ACIR80568	Study of gastric emptying by use of technetium-99m-tagged chicken liver as a marker of solid food in patients with reflux esophagitis
1980	ACIR80625	Intravenous administration of 131-I (NP-59) for adrenal evaluation and imaging [Study terminated at LAMC because of base closing]
1980	ACIR80394	Detection of subclinical effects of radiation therapy on the spinal cord by averaged somatosensory evoked potential
1980	ACIR80004	Comparative sensitivity of tomographic and planar scintigraphy in myocardial perfusion and small organ imaging
1980	ACIR80042	Natural history of the technetium 99m-(Tc mDP) bone scan after elective joint replacement
1980	ACIR80149	Evaluation of hematochezia with double contrast barium enema and colonoscopy
1980	ACIR80191	Protocol to compare segmental mastectomy and axillary dissection with and without radiation of the breast and total mastectomy and axillary dissection
1980	ACIR80627	Clinical trial to evaluate post-operative radiation and post-operative systemic chemotherapy in the management of resectable rectal carcinoma, NSABP r-01

ARMY 1975-1994 (CONTINUED)

Letterman Army Medical Center, San Francisco, CA (continued)

Start Date	Number	Title
1981	ACIR81205	Non-randomized trial of combination chemotherapy and sequential hemi-body radiation therapy in high tumor burden multiple myeloma, NCOG 9m91
1981	ACIR81154	Technetium Tc-99m disofenin kit for hepatobiliary imaging
1981	ACIR81000-G	Technetium-99m disofenin kit for hepatobiliary imaging
1982	ACIR82354	Phase I-II study evaluating the toxicity and effectiveness of charged particle radiotherapy for patients with unresectable localized gastric carcinoma, NCOG 3s91
1982	ACIR82353	Phase II protocol of heavy charged particle radiotherapy for localized esophageal squamous cell carcinoma, NCOG 3e81
1982	ACIR82287	Randomized phase II study of irradiation, irradiation plus misonidazole, and irradiation plus BCNU for the treatment of metastases to the brain, NCOG 6g81
1982	ACIR82348	Effect of glucagon injection on diagnostic accuracy of double contrast and barium examinations of the upper and lower gastrointestinal tract
1982	ACIR82349	CT (computed tomography) evaluation of retroperitoneal gas resorption after abdominal aortic surgery: A prospective study
1982	ACIR82355	Phase III study comparing Adriamycin and Ftorafur vs radiation and Adriamycin + Ftorafur vs mitomycin C + Ftorafur for patients with disseminated gastric cancer, NCOG 35801j
1982	ACIR82553	Reverse redistribution on 201-thallium chloride stress and redistribution images-reproducible?
1982	ACIR82437	Identification of tubular ectasia and medullary sponge kidney on radionuclide renal scan
1982	ACIR82000-D	Clinical evaluation of cisternography utilizing indium-111 DTPA (1982)
1983	ACIR83043	Assessment of regional wall motion abnormalities by radionuclide angiography; effect of sublingual nitroglycerin. Tc-99m sulphur colloid
1983	ACIR83004	Evaluation of indium oxine In-111 labeled cellular blood components
1983	ACIR83405	Phase I-II study of radiotherapy plus BUDR and procarbazine, CCNU, vincristine (PCV) for the treatment of primary malignant brain tumors, NCOG 6g821

ARMY 1975-1994 (CONTINUED)

Letterman Army Medical Center, San Francisco, CA (continued)

Start Date	Number	Title
1984	ACIR84216	Rest and exercise radionuclide angiography in the assessment of ischemic heart disease in patients with aorto-iliac occlusive disease
1984	ACIR84419	Phase III trial of 7-drug vs 3-drug chemotherapy regimens with or without prophylactic cranial irradiation (PCI) for undifferentiated small cell anaplastic lung cancer (oat cell): Extensive disease, NCOG 20831
1984	ACIR84423	CT scanning and myelography in the diagnosis of metastasis to the axial skeleton
1984	ACIR84061	Rest and exercise radionuclide ventriculography in the assessment of coronary artery disease
1985	ACIR85151	Left ventricular diastolic function in the assessment of doxorubicin cardiotoxicity using radionuclide ventriculography
1985	ACIR85177	Phase III study to determine the effect of combining chemotherapy (cisplatin and 5-FU) with surgery and radiotherapy for resectable squamous cell carcinoma of the head and neck
1985	ACIR85364	Phase III randomized trial of heavy charged particle radiotherapy vs. standard photon irradiation of unresectable non-oat cell carcinoma of the lung, NCOG 2n-84-1
1986	ACIR86461	Subtotal lymphoid irradiation (STLI) or total lymphoid irradiation vs involved field irradiation (IF) plus vinblastine, bleomycin, and methotrexate (VBM) chemotherapy in favorable Hodgkin's disease, NCOG 8h-85-1
1986	ACIR86155	Controlled randomized trial comparing supervoltage external beam irradiation alone with combined supervoltage x-ray therapy and heavy charged particle therapy for patients with localized stage T3-4 prostatic cancer, NCOG 4p-85-1
1986	ACIR86073	Randomized phase III study of heavy charged particle radiotherapy vs iodine (125-I) plaque radiotherapy in the treatment of localized uveal melanoma, NCOG 70-85-1
1986	ACIR86576	Procarbazine, L-phenylalanine mustard, vinblastine, & total lymph radiation vs nitrogen mustard, vincristine, procarbazine, prednisone, & Adriamycin, bleomycin, vinblastine, DTIC (MOPP/ABVD) in advanced Hodgkin's disease, NCOG 8h852
1986	ACIR86058	Evaluation of indium 111 oxine labeled autologous leukocytes in localization of inflammatory processes

ARMY 1975-1994 (CONTINUED)

Letterman Army Medical Center, San Francisco, CA (continued)

Start Date	Number	Title
1986	ACIR86575	Phase II study of radiotherapy with chemotherapy for inoperable advanced squamous cell carcinoma of the head and neck, NCOG 71181
1986	ACIR86017	Phase II study of infusion chemotherapy (5-FU, mitomycin-C, cisplatin) and radiotherapy for advanced carcinoma of the cervix, NCOG 5c841j
1987	ACIR87285	Randomized phase III study of conventional fractionated radiotherapy versus conventional fractionated radiotherapy and bromodeoxyuridine (BUDR) for tumors metastatic to the brain, NCOG 6g-85-2
1988	ACIR88555	Phase III study of Zoladex adjuvant to radiotherapy in unfavorable prognosis carcinoma of the prostate, RTOG 85-31
1988	ACIR88570	Treatment of localized non-Hodgkin's lymphoma: Comparison of chemotherapy (CHOP) to chemotherapy plus radiation therapy
1988	ACIR88352	Compare adjuvant methyl-CCNU, vincristine, 5-fluorouracil (MOF) with and without radiation to adjuvant leucovorin and 5-fluorouracil (LV-F-FU) with and without radiation in patients with Dukes' B and C carcinoma of rectum, NSABP r-02
1988	ACIR88350	Phase III study of no therapy vs radiation therapy vs eflornithine (DFMO) plus methylbisguany-hydrazone (MGBG) for non-enhancing moderately and mildly anaplastic gliomas of the brain, NCOG 6g-87-1 (nci t86-0226)
1989	ACIR89235	Geographically dispersed phase III protocol for strontium-89 chloride injection
1989	ACIR89074	Prospective trial for localized cancer of the esophagus: Comparing radiation as a single modality to the combination of radiation therapy and chemotherapy, phase III, SWOG 8598, RTOG 85-01
1989	ACIR89406	Prospective comparison study of arthrography, double-contrast computerized arthrotomography, and magnetic resonance imaging (MRI) of the shoulder
1989	ACIR89522	Randomized phase II study of external brain irradiation with neon ions followed by procarbazine, CCNU and vincristine (PCV) for the treatment of primary glioblastoma multiforme, NCOG d6g-87-2
1989	ACIR89723	Clinical trial to determine the worth of tamoxifen and the worth of breast radiation in the management of patients with node-negative, clinically occult, invasive breast cancer treated by lumpectomy
1989	ACIR89000	Assessment of glomerular filtration rate in intensive care patients with renal dysfunction using 99-m-Tc-DTPA clearance

ARMY 1975-1994 (CONTINUED)

Letterman Army Medical Center, San Francisco, CA (continued)

Start Date	Number	Title
1989	ACIR89523	Phase II study of external brain irradiation and hydroxyurea with an interstitial 'boost' followed by procarbazine, CCNU, and vincristine (PCV) for the treatment of primary brain tumors
1990	ACIR90425	Phase III study of radiation therapy alone or in combination with chemotherapy for patients with non-small cell lung cancer, RTOG 88-08/ECOG EST 4588
1990	ACIR90457	Phase III randomized study employing 5-fluorouracil and radiotherapy versus 5-fluorouracil, mitomycin-C, and radiotherapy in carcinoma of the anal canal, RTOG 87-04/ECOG 1289
1990	ACIR90580	Feasibility trial of postoperative radiotherapy plus cisplatin followed by three courses of 5-FU plus cisplatin in patients with resected head and neck cancer, phase II pilot
1990	ACIR90516	Relationship of the sense of coherence and hardiness to the nutritional status of anorectic head and neck cancer patients currently undergoing radiation therapy
1991	ACIR91112	Use of strontium-89 chloride: A patient with prostate cancer with metastases to bone
1991	ACIR91114	Cisplatin plus etoposide combined with standard fractionation thoracic radiotherapy vs cisplatin plus etoposide combined with multiple daily fractionated thoracic radiotherapy for limited stage small cell lung cancer, RTOG 8815
1991	ACIR91115	Role of neoadjuvant MCV chemotherapy combined with transurethral surgery plus cisplatin with radiation therapy for the selected bladder preservation in patients with muscle-invading bladder cancer, RTOG 8903

Madigan Army Medical Center, Tacoma, WA

Start Date	Number	Title
1975	ACIR75000-M	Stage IIIa and b Hodgkin's disease remission induction by radiation therapy plus chemotherapy combination vs. chemotherapy alone, SWOG 7518
1975	ACIR75000-H	5-FU, meCCNU + radiotherapy with or without testolactone for localized adenocarcinomas of the exocrine pancreas, SWOG 7509
1975	ACIR75000-D	Gallium-67 citrate body scanning for tumor or abscesses

ARMY 1975-1994 (CONTINUED)

Madigan Army Medical Center, Tacoma, WA (continued)

Start Date	Number	Title
1976	ACIR76000-Y	Treatment of early squamous cell carcinoma of the head and neck with chemotherapy or chemoimmunotherapy following initial surgery and/or radiotherapy, SWOG 7620
1976	ACIR76000-U	Combined chemotherapy/radiation therapy/immunotherapy for small cell (oat cell) carcinoma of the lung, phase III, SWOG 7628
1976	ACIR76000-M	Combined modality treatment of limited squamous carcinoma of the lung, phase III, SWOG 7635
1977	ACIR77000-P	Radiation therapy in combination with BCNU, DTIC, or procarbazine in patients with malignant gliomas of the brain - phase III, SWOG 7703
1978	ACIR78000-M	Phase III protocol - radiotherapy-chemotherapy (MOPP) for stages I and II, a and b Hodgkin's, SWOG 781
1979	ACIR79294	Evaluation of radiation therapy in the management of endoscopically visible tumors of the lung
1980	ACIR80133	Effects of exogenous iodine on the I-123 uptake of patients with hyperthyroidism and an elevated I-123 uptake
1980	ACIR80236	Chemotherapy or chemotherapy and immunotherapy following initial surgery and/or radiotherapy for treatment of early squamous cell cancer of the head and neck, SWOG 7965
1980	ACIR80221	Comparison of involved field radiotherapy with involved field radiotherapy plus adjuvant chemotherapy and extended field radiotherapy in the treatment of stages I and II Hodgkin's disease in children, CCG 541
1980	ACIR80335	In vivo uptake of 131-I by semen and other body fluids
1980	ACIR80540	Surgical pathological study of women with invasive carcinoma of the cervix, stage Ib, randomly assigned radiation vs no further therapy in selected patients
1980	ACIR80635	Treatment of women with cervical cancer stage IIb, IIIb, IVa confined to the pelvis and/or para-aortic nodes with radiotherapy alone vs radiotherapy plus immunotherapy (phase II) (IV C. parvum - a killed germ)
1980	ACIR80641	Randomized study of Adriamycin as an adjuvant after surgery and radiation therapy in patients with high risk endometrial carcinoma, stage I and occult stage II

ARMY 1975-1994 (CONTINUED)

Madigan Army Medical Center, Tacoma, WA (continued)

Start Date	Number	Title
1981	ACIR81528	Randomized double blind clinical trial evaluating cholestyramine prophylaxis for radiation-induced diarrhea, phase III, GOG 53
1981	ACIR81508	Prophylactic alternate day corticosteroid therapy following irradiation for lung carcinoma
1981	ACIR81329	Randomized study of radiation therapy vs pelvic node resection for patients w/ invasive squamous cell carcinoma of vulva having positive groin nodes, GOG 37
1981	ACIR81534	Treatment of newly diagnosed acute non-lymphocytic leukemia w/multiagent chemotherapy (cyclic vs continuous) or bone marrow transplantation following total body irradiation, CCG 251
1982	ACIR82017	Randomized comparison of extended field radiation therapy and hydroxyurea followed by cisplatin or no further therapy in patients with cervical squamous cell metastatic to lymph nodes (phase III)
1982	ACIR82149	Randomized comparison of hydroxyurea vs misonidazole as an adjunct to radiation therapy in patients with stages IIb, III, and IVa carcinoma of the cervix and negative para-aortic nodes (phase III)
1982	ACIR82005	Protocol to compare segmental mastectomy and axillary dissection with and without radiation of the breast and total mastectomy and axillary dissection, NSABP b-06
1983	ACIR83328	Combined modality therapy for multiple myeloma. VMCP-VBAP for remission induction therapy: VMCP and levamisole vs sequential half-body radiotherapy-chemotherapy alone, phase III - SWOG 8229/30
1983	ACIR83224	Prospective evaluation of clinical, x-ray, histologic, scintigraphic, and microbiologic characteristics of diabetic feet (a multicenter study)
1983	ACIR83346	Treatment of small cell lung cancer with VP-16/cis-platinum, alternating with vincristine/Adriamycin/cyclophosphamide and radiation vs concurrent VP-16/ vincristine/Adriamycin/cyclophosphamide and radiation, phase III
1983	ACIR83431	Treatment of primary brain tumors with adjuvant chemotherapy and radiation therapy utilizing intra-arterial cis-platinum and CCNU, phase I - II, pilot, SWOG 8272
1983	ACIR83343	Patients with suboptimal stage Ib carcinoma of cervix: Randomized radiation therapy and post-treatment para-aortic and common iliac lymphadenectomy vs radiation lymphadenectomy and extrafascial hysterecomy, GOG 71

ARMY 1975-1994 (CONTINUED)

Madigan Army Medical Center, Tacoma, WA (continued)

Start Date	Number	Title
1984	ACIR84466	Postoperative pelvic radiation in state I & II mixed mesodermal sarcomas of the uterus, GOG 75
1984	ACIR84423	CT scanning and myelography in the diagnosis of metastasis to the axial skeleton
1984	ACIR84255	Treatment of advanced bladder cancer with preoperative irradiation and radical cystectomy versus radical cystectomy alone, phase III
1984	ACIR84425	Use of x-ray pelvimetry and ultrasonic parameters to predict cephalo-pelvic disproportion and shoulder dystocia
1984	ACIR84637	Surgery, radiation, and chemotx with bleomycin, vinblastine, cis-platinum diamine-dichloride, actinomycin-D, cyclophosphamide, & Adriamycin in local and metastatic malignant germ cell ovarian tumors of childhood, CCG 861
1985	ACIR85177	Phase III study to determine the effect of combining chemotherapy (cisplatin and 5-FU) with surgery and radiotherapy for resectable squamous cell carcinoma of the head and neck
1985	ACIR85244	Combination chemotherapy (COPE) and radiation therapy for extensive small cell lung cancer, phase II - pilot
1985	ACIR85130	Comparison of thallium stress testing and cardiac pacing stress testing in the preoperative evaluation of patients undergoing abdominal aortic aneurysmectomy and/or aortofemoral revascularization
1985	ACIR85551	Simultaneous cis-platinum + radiation therapy compared with standard radiation therapy in the treatment of unresectable squamous or undifferentiated carcinoma of the head and neck, phase III
1985	ACIR85300	Phase II study of cisplatin plus continuous infusion 5-fluorouracil and radiotherapy in locally advanced esophageal cancer (part 1 and 2) to be done in conjunction with the University of Indiana
1985	ACIR85306	Use of serial bone scans, x-rays, and CT scans in assessing the response of bone metastasis to systemic treatment
1985	ACIR85307	Use of serial computed tomography (CT) scans to evaluate response to radiation therapy
1985	ACIR85261	Treatment of limited non-small cell lung cancer: Radiation versus radiation plus chemotherapy (FOMI/CAP), phase III, SWOG 8300

ARMY 1975-1994 (CONTINUED)

Madigan Army Medical Center, Tacoma, WA (continued)

Start Date	Number	Title
1986	ACIR86068	CT scanning, CT myelography, and magnetic resonance imaging in the diagnosis of the metastasis to the axial spine
1986	ACIR86616	Intra-arterial cis-platinum and radiation therapy in primary brain tumors: A phase II randomized study comparing sequential and combined treatments
1986	ACIR86434	Phase III trial comparing combination chemotherapy with whole abdominal radiation therapy for stage III optimal epithelial ovarian cancer with no gross residual disease or gross residual disease < or equal to 1 cm
1986	ACIR86643	Treatment of limited small cell lung cancer with concurrent chemotherapy, radiotherapy, and intensification with high dose cyclophosphamide, phase II pilot, SWOG 8573
1987	ACIR87047	Randomized study of radical vulvectomy and bilateral groin disease dissection versus radical vulvectomy and bilateral groin radiation, GOG 88
1987	ACIR87367	Prospective trial for localized cancer of the esophagus: Comparing radiation as a single modality to the combination of radiation and chemotherapy, phase III
1987	ACIR87082	Clinical and field testing of the National Bureau of Standards (NBS) hand-held dental x-ray system
1987	ACIR87103	Prospective evaluation of testicular shielding in preventing hypogonadism in prostate cancer patients receiving external beam radiotherapy
1987	ACIR87105	Bone scan versus spinal magnetic resonance imaging in the evaluation of new back pain in patients with cancer
1987	ACIR87487	High dose cisplatin, VP-16 with or without radiation therapy in advanced non-small cell lung cancer
1987	ACIR87480	Randomized phase III intergroup study of supradiaphragmatic irradiation in stage IIa seminoma (RTOG 8514/intergroup 0055) - SWOG 8597
1987	ACIR87378	Phase II study of the treatment of papillary serous carcinoma of the endometrium stage I and II and maximally debulked advanced endometrial carcinoma with total abdominal radiation therapy, GOG 94
1988	ACIR88073	Phase II evaluation of preoperation chemoradiation for advanced vulvar cancer, GOG 101
1988	ACIR88135	Phase III randomized study of adjunctive radiation therapy in intermediate risk endometrial adenocarcinoma, GOG 99

ARMY 1975-1994 (CONTINUED)

Madigan Army Medical Center, Tacoma, WA (continued)

Start Date	Number	Title
1988	ACIR88071	Treatment of selected patients with stage Ib carcinoma of the cervix after radical hysterectomy and pelvic lymphadenectomy: Pelvic radiation therapy versus no further therapy, GOG 92
1988	ACIR88504	Investigation into thyroid function abnormality associated with Hexabrix, a new intravenous iodine-containing contrast agent
1988	ACIR88348	Induction chemotherapy with high-dose cyclophosphamide for poor prognosis, disseminated breast cancer with radiation therapy in complete responders, phase II pilot, SWOG 8571
1988	ACIR88482	Clinical and radiographic evaluation of base wedge osteotomies of the first metatarsal
1989	ACIR89712	Evaluation of intraperitoneal chromic phosphate suspension therapy following negative second-look laparotomy for epithelial ovarian carcinoma (stage III), phase III
1989	ACIR89632	Treatment of limited small cell lung cancer with concurrent chemotherapy, radiotherapy, with or without GM-CSF and subsequent randomization to maintenance interferon or no maintenance
1989	ACIR89523	Phase II study of external brain irradiation and hydroxyurea with an interstitial 'boost' followed by procarbazine, CCNU, and vincristine (PCV) for the treatment of primary brain tumors
1989	ACIR89741	Phase II study of high dose methotrexate and craniospinal irradiation for the treatment of primary lymphoma of the central nervous system, UWNG 88-01
1989	ACIR89195	Treatment of localized non-Hodgkin's lymphoma: Comparison of chemotherapy (CHOP) to chemotherapy plus radiation therapy, SWOG 8736
1990	ACIR90617	Randomized comparison of hydroxyurea versus 5-FU infusion and bolus cisplatin as an adjunct to radiation therapy in patients with stages IIb, III, and IVa carcinoma of the cervix and negative para-aortic nodes
1990	ACIR90249	Evaluation of radiation treatment following surgical resection of solitary brain metastasis
1990	ACIR90516	Relationship of the sense of coherence and hardiness to the nutritional status of anorectic head and neck cancer patients currently undergoing radiation therapy
1991	ACIR91437	Measurement of radiation exposure to all personnel in an emergency department

ARMY 1975-1994 (CONTINUED)

Madigan Army Medical Center, Tacoma, WA (continued)

Start Date	Number	Title
1991	ACIR91060	Study of radiotherapy with or without concurrent cisplatin in patients with nasopharyngeal cancer, phase III
1992	ACIR92557	Evaluation of hydroxyurea 5-FU infusion and bolus cisplatin as an adjunct to radiation therapy in patients with stages IIb, III, and IVa carcinoma of the cervix and negative para-aortic nodes, GOG 113
1992	ACIR92362	Feasibility trial of postoperative radiotherapy plus cisplatin followed by three courses of 5-FU plus cisplatin in patients with resected head and neck cancer, phase II pilot
1992	ACIR92650	Prospective evaluation of gonadal damage in thyroid cancer patients treated with radioactive iodine
1992	ACIR92070	Study of external brain irradiation and cisplatin/BCNU followed by BCNU for the treatment of primary malignant brain tumor, phase II
1993	ACIR93127	Multicenter clinical study using a technetium-labeled monoclonal antibody for imaging patients with small cell lung cancer
1993	ACIR93633	Multicenter clinical study to compare imaging of non-small cell lung cancer with a technetium-labeled monoclonal antibody produced by two different manufacturers
1994	ACIR94278	Randomized comparison of 5-FU and cisplatin as adjunct to radiation therapy in patients with stages Ia2, Ib, and IIa carcinoma of the cervix following radical hysterectomy and node dissection phase III intergroup
1994	ACIR94333	Comparison of a high resolution computed tomography technique and fiberoptic bronchoscopy in the evaluation of hemoptysis
1994	ACIR94322	Trial of adjuvant chemoradiation after gastric resection for adenocarcinoma, phase II
1994	ACIR94239	Indium-111 labeled pentetreotide for carcinoid tumor for patient (name redacted), one-time emergency use

Naval Blood Research Laboratory, Boston, MA

Start Date	Number	Title
1985	MRDC002	Blood volume expansion and hypohydration

ARMY 1975-1994 (CONTINUED)

Naval Blood Research Laboratory, Boston, MA (continued)

Start Date	Number	Title
1988	MRDC003	Interaction of aerobic fitness and the hypohydration response during exercise-heat stress
1989	MRDC004	Role of thermal factors for metabolic adaptations to physical training
1991	MRDC006	Hyperhydration with a glycerol solution: Effects on fluid and electrolyte balance during rest and cold/exercise exposure
1992	MRDC031	Interaction of hypohydration and metabolic intensity on thermoregulatory responses during exercise-heat stress
1993	MRDC007	Effects of autologous erythrocyte infusion in sea-level residents rapidly transported to high altitude

Pikes Peak, CO

Start Date	Number	Title
1993	MRDC007	Effects of autologous erythrocyte infusion in sea-level residents rapidly transported to high altitude

Tripler Army Medical Center, Honolulu, HI

Start Date	Number	Title
1976	ACIR76000-S	Clinical evaluation of fluorescent scanning of the thyroid with americium (external source)
1976	ACIR76000-P	Clinical evaluation of cisternography utilizing indium-111 DTPA (1976)
1976	ACIR76000-R	Clinical evaluation of the thyroid by in vivo radionuclidic studies utilizing 123-I
1976	ACIR76000-N	Gallium-67 citrate in the diagnosis of tissue tumors and/or abscesses, TAMC 13/76
1976	ACIR76000-I	Evaluation of posterior spine fusions in scoliosis by radioisotope bone scan, TAMC 44/76
1976	ACIR76000-Q	Thallium-201 chloride for diagnosis of myocardial ischemia and/or myocardial infarction
1977	ACIR77000-E	Correlation of CT scanning with positive bone scans in evaluation of metastatic disease to bone

ARMY 1975-1994 (CONTINUED)

Tripler Army Medical Center, Honolulu, HI (continued)

Start Date	Number	Title
1977	ACIR77000-F	Comparison of treatment regimens for first CNS relapse in childhood acute lymphoblastic leukemia (CNS leukemia study 6) , SWOG 7712
1977	ACIR77000-G	Indium-111 bleomycin in the diagnosis of tumors, TAMC 19/77
1977	ACIR77000-U	Indium-111 bleomycin in the diagnosis of tumors
1977	ACIR77000-D	Comparison of diagnostic accuracy of double contrast knee arthrography and computed tomography of the knee
1978	ACIR78000-C	Evaluation of patients for thyroid disease who experienced childhood irradiation to the head and neck, TAMC 8/78
1979	ACIR79035	Radiographic differential diagnosis of lower extremity bowing
1979	ACIR79000-C	Rescue therapy for non-CNS extramedullary disease in children with acute lymphoblastic leukemia, phase III, SWOG 7901
1979	ACIR79000-B	Radionuclide imaging in cases of suspected child abuse
1980	ACIR80000-B	Radioisotope scanning in the diagnosis of bone and joint infections, TAMC 29/80
1980	ACIR80000-A	Study of internal mammary lymph nodes in patients with inner quadrant breast cancer, TAMC 19/80
1980	ACIR80143	Thallium-201 myocardial imaging in detecting right ventricular dysfunction in chronic obstructive pulmonary disease
1980	ACIR80144	Minimum exposure requirements for an excretory urogram
1980	ACIR80399	In vivo evaluation of the hepatobiliary system with technetium-99m
1980	ACIR80309	National study of contrast media reactions
1981	ACIR81263	Study of the size of the thoracic aorta with computerized tomography in normal and abnormal patients
1981	ACIR81484	Comparison of involved field (IF) radiotherapy plus MOPP and low bleomycin with IF radiotherapy and A-COPP in stage III Hodgkin's disease, SWOG 7612
1981	ACIR81488	Comparison of involved field radiotherapy with adjuvant MOPP chemotherapy in the treatment of stage I and II Hodgkin's disease phase III, SWOG 7660

ARMY 1975-1994 (CONTINUED)

Tripler Army Medical Center, Honolulu, HI (continued)

Start Date	Number	Title
1981	ACIR81507	Multimodal therapy of metastatic Ewing's sarcoma with chemotherapy plus irradiation and surgery (if possible) intergroup, phase III, SWOG 8095
1981	ACIR81498	A-COPP plus for non-Hodgkin's lymphoma in children, phase III , SWOG 7905
1981	ACIR81501	Therapy for extraocular retinoblastoma with cyclophosphamide, vincristine, Adriamycin, and irradiation, SWOG 7994
1982	ACIR82000-A	Intermittent L-thyroxine suppression of thyroid function, TAMC 3a062110a822
1982	ACIR82627	Concurrent chemo-radiotherapy for limited small cell carcinoma of the lung, phase II - pilot
1982	ACIR82000-B	Clinical, radiologic, and physiologic effects of malaria on the lung, TAMC 3a062110a822
1982	ACIR82000-C	Thyroid function in pediatric patients on chronic iodide expectorant medication, TAMC 3a062110a822
1983	ACIR83499	Treatment of advanced seminoma (stage cII (n4) + cIII) with combined chemotherapy and radiation therapy, phase II, SWOG 8104
1983	ACIR83000-A	Enhancing visualization of small nodules in radiographic examinations, TAMC 31/83
1983	ACIR83209	Multi-agent chemotherapy with adjuvant whole-body irradiation in half-body increments in patients with clinical group IV rhabdomysarcoma
1984	ACIR84154	Treatment of small cell lung cancer with VP-16/cis-platinum, alternating with vincristine/Adriamycin-cyclophosphamide and radiation vs concurrent VP-16/ vincristine/Adriamycin/cyclophosphamide and radiation, phase III, SWOG 8232
1984	ACIR84000	Perfecting radiological technique of percutaneous transhepatic portal venography, TAMC 1t84
1984	ACIR84399	Comparison of aggressive radiotherapy + chemotherapy vs aggressive chemotherapy in the treatment of limited carcinoma of the pancreas, phase III
1984	ACIR84344	Comprehensive therapy for Ewing's sarcoma: Tailored vs standard radiation therapy
1985	ACIR85323	Simultaneous cis-platinum plus radiation therapy compared with standard radiation therapy in the treatment of unresectable squamous or undifferentiated carcinoma of the head and neck, phase III, SWOG 8493

ARMY 1975-1994 (CONTINUED)

Tripler Army Medical Center, Honolulu, HI (continued)

Start Date	Number	Title
1985	ACIR85230	Trial of cis-diamine-dichloro-platinum (II) (DDP) combined with small-field pelvic radiation therapy for patients with clinically localized invasive primary carcinoma of the bladder who are unsuitable for cystectomy, group...
1985	ACIR85502	Comparison of pregnancy rates using oil-based and water-based contrast medium in the evaluation of tubal patency
1985	ACIR85321	Management of locally or regionally recurrent but surgically resectable breast cancer, phase III, SWOG 8293
1985	ACIR85235	Small field pelvic, high-dose, external beam radiation for patients with persistent or recurrent low stage bladder cancer following transurethral resection and/or fulguration and intravesical chemotherapy and/or immunotherapy, NBCCGA 15
1985	ACIR85462	Golytely colon preparation for double-contrast barium enema
1985	ACIR85177	Phase III study to determine the effect of combining chemotherapy (cisplatin and 5-FU) with surgery and radiotherapy for resectable squamous cell carcinoma of the head and neck
1985	ACIR85160	Randomized trial of radical cystectomy compared to preoperative radiation therapy and radical cystectomy in patients with invasive primary carcinoma of the bladder
1985	ACIR85064	Treatment of limited non-small cell lung cancer: Radiation versus radiation plus chemotherapy (FOMI/CAP), phase III, SWOG 8300
1986	ACIR86195	Trial of neoadjuvant chemotherapy followed by combined cis-platinum and radiation for patients with localized invasive bladder cancer unsuitable for cystectomy, phase I/II, NBCG 18
1986	ACIR86468	Intensive chemotherapy (MOPP-ABVD) plus low-dose total nodal radiation therapy in the treatment of stages IIb, IIIa2, IIIb, IV Hodgkin's disease in pediatric patients, a groupwide pilot study
1987	ACIR87480	Randomized phase III intergroup study of supradiaphragmatic irradiation in stage IIa seminoma (RTOG 8514/intergroup 0055) - SWOG 8597
1987	ACIR87367	Prospective trial for localized cancer of the esophagus: Comparing radiation as a single modality to the combination of radiation and chemotherapy, phase III
1987	ACIR87702	Treatment of hepatoblastoma (HB) with surgery, chemotherapy, and radiation therapy, POG 8696/97

ARMY 1975-1994 (CONTINUED)

Tripler Army Medical Center, Honolulu, HI (continued)

Start Date	Number	Title
1987	ACIR87543	Medulloblastoma favorable prognosis: Randomized study of reduced dose irradiation to brain and spinal contents versus standard dose irradiation, a POG phase III study in conjunction with CCSG
1987	ACIR87581	Randomized comparison of hydroxyurea versus 5-FU infusion and bolus cisplatin as an adjunct to radiation therapy in patients with stages IIb, III, and IVa carcinoma of the cervix and negative para-aortic nodes, GOG 85
1988	ACIR88000	Treatment of selected intermediate risk patients with stage Ib carcinoma of the cervix after radical hysterectomy and pelvic lymphadenectomy: Pelvic radiation therapy vs no further treatment, GOG 92
1988	ACIR88570	Treatment of localized non-Hodgkin's lymphoma: Comparison of chemotherapy (CHOP) to chemotherapy plus radiation therapy
1988	ACIR88608	Randomized study of intensive chemotherapy (MOPP/ABVD) +/- low dose total nodal radiation therapy in the treatment of stages IIb, IIIa2, IIIb, and IV Hodgkin's disease in pediatric patients
1988	ACIR88398	Randomized phase II study of carboplatin (CBDCA) vs CHIP in the treatment of children with progressive or recurrent brain tumors, POG 8638
1989	ACIR89723	Clinical trial to determine the worth of tamoxifen and the worth of breast radiation in the management of patients with node-negative, clinically occult, invasive breast cancer treated by lumpectomy
1989	ACIR89632	Treatment of limited small cell lung cancer with concurrent chemotherapy, radiotherapy, with or without GM-CSF and subsequent randomization to maintenance interferon or no maintenance
1989	ACIR89782	Study of radiotherapy with and without concurrent cisplatin in patients with nasopharyngeal cancer, phase III, SWOG 8892
1989	ACIR89147	Clinical utility of post-thoracentesis chest roentgenography
1989	ACIR89318	Treatment of children less than three years of age with malignant brain tumors using postoperative chemotherapy and delayed irradiation, POG 8633/34
1989	ACIR89630	Neoadjuvant cisplatin and VP-16 plus concurrent chest and optional brain irradiation for patients with stage III non-small cell lung carcinoma, a phase II pilot
1990	ACIR90580	Feasibility trial of postoperative radiotherapy plus cisplatin followed by three courses of 5-FU plus cisplatin in patients with resected head and neck cancer, phase II pilot

ARMY 1975-1994 (CONTINUED)

Tripler Army Medical Center, Honolulu, HI (continued)

Start Date	Number	Title
1990	ACIR90665	Protocol for surgical adjuvant therapy of rectal carcinoma: A controlled evaluation of a) protracted infusion 5-FU as a radiation enhancer, and b) 5-FU plus methyl-CCNU chemotherapy, SWOG 8896
1990	ACIR90633	Treatment of pathologic stage C carcinoma of the prostate with adjuvant radiotherapy
1990	ACIR90442	Pre-irradiation chemotherapy in supratentorial malignant tumors, POG 8832
1990	ACIR90546	Radiologic evaluation of cervical spine trauma: A selective approach
1991	ACIR91676	Pre-radiation chemotherapy for children with supratentorial malignant gliomas and poorly differentiated embryonal tumors of childhood
1991	ACIR91555	Phase II study of external beam radiation therapy and implant boost with or without hyperthermia for primary glioblastoma multiforme, NCOG 6g-90-2
1991	ACIR91595	Dose-escalating study of cisplatin, used concomitantly with hyperfractionated irradiation in the treatment of children with newly-diagnosed brain stem gliomas, a phase I study
1991	ACIR91677	Phase I/II dose escalating trial of hyperfractionated irradiation in the treatment of supratentorial malignant tumors of childhood
1992	ACIR92598	Contrast radiography in small bowel obstruction: A prospective randomized trial
1992	ACIR92184	Randomized comparison of radiation therapy and adjuvant hysterectomy vs radiation therapy and weekly cisplatin and adjuvant hysterectomy in patients with bulky stage Ib carcinoma of the cervix, phase III
1992	ACIR92602	Phase III randomized trial of standard vs. dose-intensified chemotherapy for children 3 years of age with a central nervous system (CNS) malignancy treated with or without radiation therapy, POG 9233/34
1992	ACIR92111	High-stage medulloblastoma, POG 9031
1992	ACIR92123	Trial of adjuvant chemoirradiation after gastric resection for adenocarcinoma, phase III, SWOG 9008
1992	ACIR92383	Hyperfractionated irradiation for posterior fossa ependymoma
1992	ACIR92118	Clinical trial to evaluate the worth of tamoxifen in conjunction with lumpectomy and breast irradiation for the treatment of noninvasive intraductal carcinoma (DCIS) of the breast, NSABP b-24

ARMY 1975-1994 (CONTINUED)

Tripler Army Medical Center, Honolulu, HI (continued)

Start Date	Number	Title
1993	ACIR93018	Randomized, prospective comparison between chemotherapy plus radiotherapy together with surgery for selected stage IIIa and selected stage IIIb (no malignant effusion) non-small cell lung cancer, SWOG 9019
1993	ACIR93123	131-I 6-beta-iodomethyl-19-norcholesterol (NP-59) for primary hyperaldosteronism and bilateral adrenal masses, one time use
1993	ACIR93079	Treatment of stage I, IIa, and IIIa1 Hodgkin's disease with ABVE and low-dose irradiation, POG 9226
1993	ACIR93017	Chronic wrist pain: Diagnostic accuracy of magnetic resonance imaging (MRI) and radionuclide bone scanning
1993	ACIR93016	Postoperative scaphoid: A comparison of magnetic resonance imaging (MRI), computed tomography (CT), and conventional radiography in the diagnosis of fracture healing
1993	ACIR93019	Treatment of children with newly-diagnosed brain stem glioma (BSG) using cisplatin as a radiosensitizer with either conventional or hyperfractionated radiotherapy, POG 9239
1993	ACIR93413	Evaluation of 131-I-MIBG (131-I metaiodobenzylguanidine sulfate) in patients suspected of having pheochromocytoma, neuroblastoma or medullary hyperplasia
1993	ACIR93412	In-cyt-103 as diagnostic imaging agent in the preoperative differentiation of benign and malignant mammographic abnormalities
1993	ACIR93517	Ultrasound versus bone scan in the evaluation of shin splints and stress fractures

Walter Reed Army Hospital/Medical Center, Washington, DC

Start Date	Number	Title
1975	ACIR75000-B	Clinical evaluation of indium-111 DTPA
1975	ACIR75000-A	Clinical evaluation of indium-111 chloride
1975	ACIR75000-K	Broad clinical evaluation of technetium-99m labeled stannous glucoheplonate as a diagnostic agent for studying the kidney
1975	ACIR75000-Q	BCNU and radiotherapy versus BCNU, radiotherapy, and hydroxyurea for primary intracranial malignant glioma double blind study

ARMY 1975-1994 (CONTINUED)

Walter Reed Army Hospital/Medical Center, Washington, DC (continued)

Start Date	Number	Title
1975	ACIR75000-T	Clinical evaluation of cisternography utilizing indium-111 DTPA (1975)
1975	ACIR75000-F	Treatment of non-Hodgkin's lymphomas in children: Methotrexate, vincristine, dexamethasone, cyclophosphamide, 6-mercaptopurine plus radiation therapy to involved areas, a phase III study, CALGB 7542
1976	ACIR76000-G	Clinical evaluation of 99m-technetium electrolytically labeled human serum albumin for injection, 99m-Tc(e)HSA
1976	ACIR76000-E	Combination chemotherapy of stage III and IV histiocytic lymphoma (reticulum cell sarcoma) in adults with or without radiotherapy or Adriamycin consolidation, CALGB 7652
1976	ACIR76000-F	Clinical evaluation of 123-iodine
1976	ACIR76000-B	Treatment of unresectable bronchogenic carcinoma with CCNU (2-chlorethyl-3-cyclohexyl-1-nitrosourea), cyclosphamide, Adriamycin, procarbazine, hexamethylmelamine, methotrexate, and irradiation,WRAMC 7601-a
1976	ACIR76000-A	I-131 induced hypothyroidism: Relationship to iodine metabolism and measurement of onset by RIA-T4 determination
1976	ACIR76000-Z	Comparison of involved field radiotherapy with adjuvant MOPP chemotherapy and extended field radiotherapy in the treatment of stage I and II Hodgkin's disease in children, phase III, CALGB 7691
1976	ACIR76000-O	Use of fluorescent thyroid scanning to evaluate iodine kinetics during propylthiouracil therapy of Graves' disease
1977	ACIR77000-V	Evaluation of deep vein thrombosis by use of 99m technetium labeled microspheres
1977	ACIR77000-B	Study of thallium chloride Tl-201 for myocardial imaging in acute infarction and/or ischemia
1977	ACIR77000-T	Radiation therapy with BCNU, DTIC, or procarbazine in malignant brain gliomas (phase III)
1977	ACIR77000-Q	Small cell carcinoma of the lung: Localized disease. A phase III study combination chemotherapy vs alternating chemotherapy and radiotherapy with or without immunotherapy, CALGB 7781
1977	ACIR77000-N	Randomized comparison of pelvic and abdominal radiation therapy vs. pelvic radiation and melphalan alone in stage II carcinoma of the ovary, phase III

ARMY 1975-1994 (CONTINUED)

Walter Reed Army Hospital/Medical Center, Washington, DC (continued)

Start Date	Number	Title
1977	ACIR77000-J	Effect of a diet controlled in lactose, gluten, fat, and residue on female oncology patients receiving abdominal radiation treatment
1977	ACIR77000-S	Comparative effectiveness of combination chemotherapy alone and with radiation therapy by involved field or extended field in poor risk patients with stage I or II Hodgkin's disease, CALGB 7751
1978	ACIR78000-N	Prevention of gonadal damage in men treated with combination chemotherapy/ radiotherapy for Hodgkin's disease and non-Hodgkin's lymphomas. Addendum 1 to WRAMC 7810
1978	ACIR78000-H	Pulmonary aspiration from gastroesophageal reflux defined by pulmonary scintiscan and overnight intra-esophageal pH monitoring
1978	ACIR78000-B	Comparative study of high dose (5000 rads) vs low dose (2000 rads) preoperative radiation to radical cystectomy for control of transitional cell carcinoma of the bladder
1978	ACIR78021	Randomized study of Adriamycin as an adjuvant after surgery and radiation therapy in patients with high risk endometrial carcinoma stage I and occult stage II, GOG 34
1979	ACIR79303	Randomized comparison of melphalan vs intraperitoneal chromic phosphate in the treatment of women with stage I epithelial carcinoma of the ovary
1979	ACIR79494	Randomized comparison of melphalan versus radioisotopes in the treatment of patients with no microscopic residual disease having all stages Ic and II (a, b, and c) and selected stages Ia II and Ib II ovarian cancer, GOG 7602
1979	ACIR79490	Combination chemotherapy for stages III and IV lymphocytic lymphoma in adults with or without radiotherapy consolidation, CALGB 7651
1979	ACIR79131	Acute lymphocytic leukemia in adults: Comparison of vincristine, prednisone, and L-asparaginase with or without daunorubicin for induction with central nervous system prophylaxis with radiotherapy and intrathecal method, CALGB 7612
1979	ACIR79480	Esophageal clearing, quantitated by radioisotope scan
1979	ACIR79481	Esophageal emptying in achalasia, quantitated by a radioisotope method
1979	ACIR79470	Randomized study of radiation therapy vs. pelvic node resection for patients with invasive squamous cell carcinoma of the vulva having positive groin nodes, GOG 37

ARMY 1975-1994 (CONTINUED)

Walter Reed Army Hospital/Medical Center, Washington, DC (continued)

Start Date	Number	Title
1979	ACIR79380	Role of hyperuricuria in the nephrotoxicity of radiocontrast agents
1979	ACIR79149	Randomized comparison of mephalan vs intraperitoneal chromic phosphate in the treatment of women with stage I epithelial carcinoma of the ovary, phase III, GOG 46
1980	ACIR80078	Determination of glomerular filtration rate using radiotracer techniques
1980	ACIR80000-E	Technetium-99m pyridoxylidene glutamate (99m-Tc-PG) for diagnosis of hepatobiliary disease (1980)
1980	ACIR80080	Combination chemotherapy and radiotherapy for stage IV Hodgkin's disease, no prior treatment, CALGB 7551
1980	ACIR80000-F	Localized small cell carcinoma of the lung, phase III study; simultaneous chemotherapy and radiotherapy vs sequential therapy (chemotherapy, radiotherapy, chemotherapy) vs chemotherapy alone, CALGB 8083
1980	ACIR80568	Study of gastric emptying by use of technetium-99m-tagged chicken liver as a marker of solid food in patients with reflux esophagitis
1980	ACIR80565	Technetium-99m hIDA (n-2-6-dimethylophenylcarbamoylmethyliminodiacetic acid) for hepatobiliary scintigraphy
1980	ACIR80202	Prevention of gonadal damage in women treated with combination chemotherapy or radiotherapy below the diaphragm for Hodgkin's or non-Hodgkin's lymphoma
1980	ACIR80128	MOPP plus BLEO and A-COPP with IF radiation therapy in stage III Hodgkin's disease in children, POG 7612
1980	ACIR80300	Comparison of Estracyt vs cis-diamine-dichloro-platinum (DDP) vs Estracyt plus DDP in patients with advanced carcinoma of the prostate who have had extensive irradiation to the pelvis or lumbosacral area, NPCP 1200
1980	ACIR80646-G	Therapy for extraocular retinoblastoma with cyclophosphamide, vincristine, Adriamycin, and irradiation, SWOG 7994
1980	ACIR80417	Surgical-pathologic study of women with invasive carcinoma of the cervix stage Ib and randomly assigned radiation therapy vs no further therapy in selected patients, GOG 49
1980	ACIR80635	Treatment of women with cervical cancer stage IIb, IIIb, IVa, confined to the pelvis and/or para-aortic nodes with radiotherapy alone vs radiotherapy plus immunotherapy (phase II)(IV C. parvum - a killed germ)

ARMY 1975-1994 (CONTINUED)

Walter Reed Army Hospital/Medical Center, Washington, DC (continued)

Start Date	Number	Title
1981	ACIR81180	Adjuvant chemotherapy of advanced head/neck cancer; & part b, induction chemotherapy, surgery, radiation, and adjuvant chemotherapy for stage III and IV squamous cell carcinoma of the head and neck, WRAMC 8101
1981	ACIR81000-C	Clinical evaluation of technetium-99m pipIDA-tin as a hepatobiliary agent
1981	ACIR81004	Intravenous administration of 131-I 6b-iodomethylnorcholesterol (NP-59) for adrenal evaluation and imaging
1981	ACIR81000-D	Adjuvant chemotherapy of advanced head & neck cancer; and part b, induction chemotherapy, surgery, radiation, & subsequent adjuvant chemotherapy for stage III and IV squamous cell carcinoma of the head & neck
1981	ACIR81000-E	Adjuvant chemotherapy following surgery and/or radiation for stage III and IV head and neck cancer
1981	ACIR81524	Radionuclide assessment of cardiac functions in patients with acromegaly
1981	ACIR81178	Multimodal therapy of metastatic Ewing's sarcoma with chemotherapy including Adriamycin, vincristine, cyclophosphamide, 5-fluorouracil, actinomycin-D plus irradiation and surgery, intergroup Ewing's sarcoma study, phase III
1981	ACIR81553	Technetium-99m antimony trisulfide colloid for interstitial lymphoscintigraphy
1981	ACIR81245	Radionuclide assessment of cardiac functional reserve in patients with hyperthyroidism and hypothyroidism
1981	ACIR81057	Technetium-99m DMSA for renal scintigraphy
1981	ACIR81242	Localized small cell carcinoma of the lung. A phase III study. Simultaneous chemotherapy and radiotherapy vs sequential therapy, CALGB 8083
1982	ACIR82149	Randomized comparison of hydroxyurea vs misonidazole as an adjunct to radiation therapy in patients with stages IIb, III, and IVa carcinoma of the cervix and negative para-aortic nodes (phase III)
1982	ACIR82160	Severe urinary tract infection - the role of ultrasound and computerized tomography
1982	ACIR82310	Technetium-99m labeled diisopropyl-IDA (DISIDA) for hepatobiliary scintigraphy
1982	ACIR82501	Comparison of liver/spleen scintigraphy, selective spleen scintigraphy, computer tomography, and ultrasound in the diagnosis of splenic trauma

ARMY 1975-1994 (CONTINUED)

Walter Reed Army Hospital/Medical Center, Washington, DC (continued)

Start Date	Number	Title
1982	ACIR82017	Randomized comparison of extended field radiation therapy and hydroxyurea followed by cisplatin or no further therapy in patients with cervical squamous cell metastatic to lymph nodes (phase III)
1982	ACIR82104	Multi-agent chemotherapy with adjuvant whole body irradiation in half-body increments in patients with clinical group IV rhabdomyosarcoma - POG 8157
1982	ACIR82113	Superfractionation radiotherapy and chemotherapy for patients with small cell carcinoma of the lung who fail locally after chemotherapy on, CALGB 8083
1982	ACIR82669	Comparison of Stilphostrol, Megace, and streptozotocin as single agents and Megace + minidose estrogen in patients with hormone refractory carcinoma of prostate who had extensive irradiation, >2000R to pelvis or lumbosacral, NPCP 1600
1983	ACIR83004	Evaluation of indium oxine In-111 labeled cellular blood components
1983	ACIR83224	Prospective evaluation of clinical, x-ray, histologic, scintigraphic, and microbiologic characteristics of diabetic feet (a multicenter study)
1983	ACIR83442	Evaluation of postprandial supine reflux events by simultaneous esophageal manometry, esophageal pH monitoring, and gastroesophageal scintiscanning in patients with hiatus hernia and esophagitis
1984	ACIR84026	Evaluation of computerized axial tomography of the chest in changing the stage or treatment of patients with Hodgkin's disease
1984	ACIR84344	Comprehensive therapy for Ewing's sarcoma: Tailored vs standard radiation therapy
1984	ACIR84125	Postoperative pelvic radiation in stage I and II mixed mesodermal sarcomas of the uterus, GOG 75
1984	ACIR84294	Cisplatin and 5-FU infusion prior to definitive radiation for unresectable non-small cell lung cancer
1984	ACIR84296	Stage IV rhabdomyosarcoma: Fractionated total body radiation as an adjunct to chemotherapy-POG pilot study
1985	ACIR85339	Characterization of radioactive uptake of indium-111 white blood cells in fractures
1985	ACIR85011	Diagnostic imaging of adrenal medulla (pheochromocytoma and neuroblastomas) with I-131 MIBG (metaiodobenzlguanidine sulfate)

ARMY 1975-1994 (CONTINUED)

Walter Reed Army Hospital/Medical Center, Washington, DC (continued)

Start Date	Number	Title
1985	ACIR85115	Characterization of the postoperative radionuclide scan patterns in patients with porous coated total hip prosthesis
1985	ACIR85156	Cis-diamine-dichloro-platinum (NSC 119875) combined with small field pelvic radiation therapy for patients with clinically localized invasive primary carcinoma of the bladder who are unsuitable for cystectomy, NBCCGA 8
1985	ACIR85493	MVPP, irradiation, and late intensification in advanced bulky mediastinal Hodgkin's disease, CALGB 8551
1985	ACIR85637	Trial of local irradiation and chemotherapy versus chemotherapy alone for the treatment of localized non-Hodgkin's lymphoma, phase III, POG 8314
1985	ACIR85636	Treatment of patients with suboptimal (bulky) stage Ib carcinoma of the cervix: A randomized comparison of radiation therapy vs radiation therapy plus adjuvant extrafascial hysterectomy, phase III, GOG 71
1985	ACIR85541	Evaluation of radiographic and electronic methods for locating the apical terminus of root canals
1985	ACIR85503	I-123 iofetamine imaging of the brain
1985	ACIR85342	Phase III study of combining chemotherapy with surgery and radiotherapy for resectable squamous cell carcinoma of the head and neck, CALGB 8591
1985	ACIR85373	Treatment of limited stage small cell lung cancer with intensive ACE/CEP combination chemotherapy, irradiation, and warfarin, CALGB 8532
1985	ACIR85502	Comparison of pregnancy rates using oil-based and water-based contrast medium in the evaluation of tubal patency
1985	ACIR85160	Randomized trial of radical cystectomy compared to preoperative radiation therapy and radical cystectomy in patients with invasive primary carcinoma of the bladder
1986	ACIR86688	Combination chemotherapy with intensive ACE/PCE and radiation therapy to the primary tumor and prophylactic whole-brain radiation therapy with or without warfarin in limited small cell carcinoma of the lung, CALGB 8534
1986	ACIR86545	Phase III trial comparing combination chemotherapy (CAP) with whole abdominal radiation therapy for stage III optimal epithelial ovarian cancer with no gross residual disease or gross residual disease less than 1 cm

ARMY 1975-1994 (CONTINUED)

Walter Reed Army Hospital/Medical Center, Washington, DC (continued)

Start Date	Number	Title
1986	ACIR86453	Evaluation of scintigraphy as a gastroesophageal reflux test, and its comparative value to standard testing methods in patients with symptomatic gastroesophageal reflux
1986	ACIR86468	Intensive chemotherapy (MOPP-ABVD) plus low-dose total nodal radiation therapy in the treatment of stages IIb, IIIa2, IIIb, IV Hodgkin's disease in pediatric patients, a groupwide pilot study
1987	ACIR87356	Retrospective review of clinical laboratory, radiologic, and pathologic findings in adult patients with splenomegaly of unknown origin
1987	ACIR87449	Phase II study of the treatment of papillary serous carcinoma of the endometrium stage I and II and maximally debulked advanced endometrial carcinoma with total abdominal radiation therapy, GOG 94
1987	ACIR87047	Randomized study of radical vulvectomy and bilateral groin disease dissection versus radical vulvectomy and bilateral groin radiation, GOG 88
1987	ACIR87056	Chromosomal radiosensitivity during the G2 cell cycle period of normal lymphocytes from individuals with malignant lymphoma: A pilot study
1987	ACIR87113	Radiographic evaluation of a new device to measure ankle range of motion: A pilot study
1987	ACIR87138	Randomized comparison of hydroxyurea vs 5-FU infusion and bolus cisplatin as adjunct to radiation therapy in patients with stages IIb, III, and IVa carcinoma of the cervix and negative para-aortic nodes, phase III, GOG 85
1987	ACIR87242	Investigation of the yield of single photon emission tomography (SPECT) in focal epilepsy
1987	ACIR87243	Evaluation of postprandial supine reflux events by simultaneous esophageal manometry, esophageal pH monitoring and gastroesophageal scintiscanning in patients with progressive systemic sclerosis with severe endoscopic...
1987	ACIR87327	Retrospective review of indium-111 white blood cell scanning in orthopaedic patients
1987	ACIR87543	Medulloblastoma favorable prognosis: Randomized study of reduced dose irradiation to brain and spinal contents versus standard dose irradiation, a POG phase III study in conjunction with CCSG
1987	ACIR87447	Treatment of children less than 3 years of age with malignant brain tumors using postoperative chemotherapy and delayed irradiation, a pediatric oncology group phase III study, POG 8633

ARMY 1975-1994 (CONTINUED)

Walter Reed Army Hospital/Medical Center, Washington, DC (continued)

Start Date	Number	Title
1987	ACIR87643	Evalution of intraperitoneal chromic phosphate suspension therapy following negative second-look laparotomy for epithelial ovarian carcinoma (stage III), phase III, GOG 93
1987	ACIR87704	Clinical roentgenographic, CT, and pathological correlation of t1n0n0 lesions in the chest
1987	ACIR87702	Treatment of hepatoblastoma (HB) with surgery, chemotherapy, and radiation therapy, POG 8696/97
1988	ACIR88139	Combined chemotherapy and radiotherapy for stage III lung cancer, CALGB 8736
1988	ACIR88267	Postoperative evaluation of patients with differentiated thyroid cancer: A study comparing 131-I, 201-Tl, and magnetic resonance imaging (MRI)
1988	ACIR88135	Phase III randomized study of adjunctive radiation therapy in intermediate risk endometrial adenocarcinoma, GOG 99
1988	ACIR88326	Strontium-89 chloride for palliation of bone pain in subjects with metastatic bone disease
1988	ACIR88527	Multi-center randomized trial of adjuvant cisplatin/bleomycin plus whole pelvis irradiation versus cisplatin/bleomycin alone in high risk stage Ib and IIa carcinoma of the cervix
1988	ACIR88530	Randomized intensive chemotherapy (MOPP/ABVD) + low dose total nodal radiation therapy in treatment of stages IIb, IIIa2, IIIb, IV Hodgkin's disease in pediatric patients - a pediatric oncology group phase III study, POG 8725
1988	ACIR88613	Pre-radiation chemotherapy in the treatment of children with brain stem tumors - a phase II study
1988	ACIR88622	Combined chemotherapy and radiotherapy for stage III lung cancer, CALGB 8831
1989	ACIR89748	Effect of face mask CPAP on radionuclide ventilation-perfusion scanning of the lung in the setting of postoperative atelectasis
1989	ACIR89431	Pre-irradiation combination chemotherapy with cisplatin and ara-C for children with incompletely resected supratentorial malignant tumors: A phase II study
1989	ACIR89088	Evaluation of spinal instrumentation in posterior spinal fusion utilizing radionuclide imaging (using Tc-99m and In-111-MDP)

ARMY 1975-1994 (CONTINUED)

Walter Reed Army Hospital/Medical Center, Washington, DC (continued)

Start Date	Number	Title
1989	ACIR89517	Phase II study of simultaneous radiotherapy and cisplatin chemotherapy followed by 5-FU and cisplatin chemotherapy in patients with locally advanced inoperable squamous cell carcinoma of the head and neck, group...
1989	ACIR89581	Indium-111 labeled white blood cell uptake in primary musculoskeletal tumors
1990	ACIR90430	Magnetic resonance imaging (MRI) characteristics following surgical excision of soft tissue sarcomas and radiation therapy in determining 'normal' postsurgical and radiation changes from recurrent disease: Retrospective study
1990	ACIR90688	Phase III trial of treatment of pathologic stage C carcinoma of the prostate with adjuvant radiotherapy, ECOG-EST 9887
1990	ACIR90689	Treatment of children with high stage medulloblastoma: Cisplatin/VP-16 pre-vs post-irradiation: A POG phase III study
1990	ACIR90281	Phase I evaluation of multiple daily fraction radiation and 5-fluorouracil plus cisplatin in stage IIb, III, and IVa carcinoma of the cervix with negative para-aortic nodes
1990	ACIR90092	Nasal radioiodine activity: A study of frequency, intensity, and pattern
1990	ACIR90516	Relationship of the sense of coherence and hardiness to the nutritional status of anorectic head and neck cancer patients currently undergoing radiation therapy
1991	ACIR91604	Dose-escalating study of cisplatin used concomitantly with hyperfractionated irradiation in the treatment of children with newly diagnosed brain stem glioma cancer: A phase I study, POG 9139
1991	ACIR91676	Pre-radiation chemotherapy for children with supratentorial malignant gliomas and poorly differentiated embryonal tumors of childhood
1991	ACIR91677	Phase I/II dose escalating trial of hyperfractionated irradiation in the treatment of supratentorial malignant tumors of childhood
1991	ACIR91607	Prospective evaluation of 99m-technetium (99m-Tc) sulfur colloid liver-spleen scan (LSS) and 99m-Tc mebrofenin hepatobiliary (BIDA) radionuclide scan for diagnosis of diffuse hepatocellular disease
1991	ACIR91515	Phase I evaluation of multiple daily fraction radiation and hydroxyurea in stage IIb, III, and IVa carcinoma of the cervix with negative para-aortic nodes
1991	ACIR91415	Response of multinodular goiters to therapeutic doses of iodine-131

ARMY 1975-1994 (CONTINUED)

Walter Reed Army Hospital/Medical Center, Washington, DC (continued)

Start Date	Number	Title
1991	ACIR91198	Study of combination chemotherapy plus irradiation for early stage Hodgkin's disease, CALGB 9051
1991	ACIR91570	Phase II study of pre-irradiation chemotherapy for pediatric and adolescent patients with nasopharyngeal carcinoma, NPC-1
1992	ACIR92260	Trial of adjuvant chemoradiation versus observation after gastric resection of adenocarcinoma, CALGB 9195
1992	ACIR92607	Randomized comparison of hydroxyurea vs hydroxyurea, 5-FU infusion & cisplatin vs weekly cisplatin as adjunct to radiation therapy in patients with stages IIb, III, or IVa carcinoma of cervix and negative para-aortic nodes
1992	ACIR92606	Treatment of children with newly diagnosed brainstem glioma using cisplatin as a radiosensitizer with either conventional or hyperfractionated radiotherapy: A pediatric oncology group phase III study, POG 9239
1992	ACIR92544	Acute changes in total and free thyroid hormone levels following radioiodine ablation therapy in the treatment of Graves' disease
1992	ACIR92509	Randomized, prospective comparison of chemotherapy plus radiotherapy and the same chemotherapy plus radiotherapy together with surgery for stage IIIa and stage IIIb non-mediastinal non-small cell lung cancer, SWOG 9019
1992	ACIR92441	Whole abdominal radiotherapy versus circadian-timed combination doxorubicin-cisplatin chemotherapy in advanced endometrial carcinoma
1992	ACIR92439	Extended field radiation therapy with concomitant 5-FU infusion and cisplatin chemotherapy in patients with cervical carcinoma metastatic to para-aortic lymph nodes (phase II)
1992	ACIR92383	Hyperfractionated irradiation for posterior fossa ependymoma
1992	ACIR92257	Trial of chemotherapy and radiation with or without carboplatin for inoperable lung cancer, CALGB 9130
1992	ACIR92184	Randomized comparison of radiation therapy and adjuvant hysterectomy vs radiation therapy and weekly cisplatin and adjuvant hysterectomy in patients with bulky stage Ib carcinoma of the cervix, phase III
1992	ACIR92141	Extended field radiation therapy with concominant 5-FU infusion and cisplatin chemotherapy in patients with cervical carcinoma metastastic to para-aortic lymph nodes, GOG 8906

ARMY 1975-1994 (CONTINUED)

Walter Reed Army Hospital/Medical Center, Washington, DC (continued)

Start Date	Number	Title
1992	ACIR92013	Roentgenographic evaluation of the AML porous coated acetabular component: A six-year minimum follow-up study
1992	ACIR92011	Documentation of irradiated lymphocyte inactivation using the CD69 surface marker and flow cytometry
1992	ACIR92418	Phase II evaluation of preoperative chemoradiation for advanced vulvar cancer, GOG 101
1993	ACIR93191	Administration of intravenous doses of 111-In-Cyt-356 in the detection of occult prostate carcinoma (protocol 356in14)
1993	ACIR93334	Phase III randomized trial of standard versus dose-intensified chemotherapy for children 3 years of age with a CNS malignancy treated with or without radiation therapy
1993	ACIR93328	Treatment of stage I, IIa, and IIIa1 Hodgkin's disease with Adriamycin, bleomycin, vincristine, & etoposide & low-dose irradiation: A phase II study, POG 9226
1993	ACIR93170	Effects of administration of the contrast agent Hexabrix on thyroid function tests and thyroid uptake of iodine
1993	ACIR93242	Radiation effects on salivary epithelial growth factor (EGF): A pilot study
1993	ACIR93192	Multicenter study of intravenously administered 111-In-Cyt-356 in the evaluation of patients with primary prostate cancer prior to staging pelvic lymph node dissection (protocol 356in15)
1993	ACIR93473	Evaluation of breast masses using technetium-99m sestamibi scintigraphy
1993	ACIR93405	Development of Graves' disease and Graves' ophthalmopathy in patients with Hodgkin's disease: Relationship to prior history of radiation therapy
1994	ACIR94076	Method for radiographic evaluation of pedicle screw violation of the vertebral endplate: A pilot study
1994	ACIR94055	Effect of irradiation on red blood cell antigen densities: A flow cytometric analysis
1994	ACIR94278	Randomized comparison of 5-FU and cisplatin as adjunct to radiation therapy in patients with stages Ia2, Ib, and IIa carcinoma of the cervix following radical hysterectomy and node dissection phase III intergroup
1994	ACIR94167	Tumoral calcinosis: A clinical and radiographic review

ARMY 1975-1994 (CONTINUED)

William Beaumont Army Medical Center, El Paso, TX

Start Date	Number	Title
1975	ACIR7500-C	125-I bone scan densitometry in the hyperthyroid state
1975	ACIR75000-O	Blood pool imaging with technetium-99m human serum albumin
1975	ACIR75000-S	Diagnostic adrenal scanning with 131-iodocholesterol
1975	ACIR75000-L	99m-Tc-sn-DTPA chelate in the detection of vesicoureteral reflux
1976	ACIR76000-C	99m-Tc pyrophosphate bone scanning agents in the diagnosis and assessment of myocardial infarction
1976	ACIR76000-H	Early detection of fatigue fracture by bone scanning with Tc-99m bone scan agents
1976	ACIR76000-AA	Technetium-99m pyrophosphate bone scanning agents in the diagnosis and assessment of myocardial infarction
1977	ACIR77000-H	Thallium-201 chloride for diagnosis of myocardial ischemia and/or myocardial infarction
1977	ACIR77000-L	Myocardial perfusion scanning with radioactive particles (99-Tc and 131-I)
1977	ACIR77000-O	Radionuclide angiocardiographic evaluation of cardiopulmonary function using a mobile dual cardiac probe
1978	ACIR78000-N	Prevention of gonadal damage in men treated with combination chemotherapy/ radiotherapy for Hodgkin's disease and non-Hodgkin's lymphomas. Addendum 1 to WRAMC 7810
1979	ACIR79414	Radiation therapy in combination with BCNU, DTIC, or procarbazine in patients with malignant gliomas of the brain, SWOG 7703
1980	ACIR80375	Direct and indirect radionuclide cytography in the detection of vesicle ureteral reflux
1980	ACIR80000-E	Technetium-99m pyridoxylidene glutamate (99m-Tc-PG) for diagnosis of hepatobiliary disease (1980)
1980	ACIR80600	Prevention of gonadal damage in men treated w/combination chemotherapy/ radiotherapy for Hodgkin's disease and non-Hodgkin's lymphomas
1980	ACIR80331	Randomized trial of chemotherapy and radiation vs radiation alone in the treatment of advanced non-small cell lung cancer

ARMY 1975-1994 (CONTINUED)

William Beaumont Army Medical Center, El Paso, TX (continued)

Start Date	Number	Title
1980	ACIR80000-H	Clinical evaluation of 99m-technetium DMSA as a kidney imaging agent
1980	ACIR80596	Treatment of early squamous cell carcinoma of head & neck with initial surgery and/or radiotherapy followed by chemotherapy vs no further treatment, phase III, SWOG 7965
1980	ACIR80282	Radiation therapy in combination with CCNU in patients with completely resected gliomas of the brain, grade I and II
1980	ACIR80202	Prevention of gonadal damage in women treated with combination chemotherapy or radiotherapy below the diaphragm for Hodgkin's or non-Hodgkin's lymphoma
1980	ACIR80232	Transvaginal absorption of estrogens in patients following pelvic irradiation
1980	ACIR80198	Clinical evaluation of 99m-technetium DMSA (dimercaptosuccinic aud) as a kidney imaging agent
1981	ACIR81000-C	Clinical evaluation of technetium-99m pipIDA-tin as a hepatobiliary agent
1981	ACIR81526	Technetium-99m pyridoxylidene glutamate (Tc-99m-PG) for diagnosis of hepatobiliary disease
1981	ACIR81135	Clinical evaluation of technetium-99m pipIDA-tin as a hepatobiliary agent
1981	ACIR81248	Transfer of I-131 from male to female during sexual intercourse
1982	ACIR82478	Clinical and surgical correlations between computerized axial tomography (CT) vs metrizamide myelography in patients with low back pain
1982	ACIR82134	Comparison of bone and joint scans in patients with new onset polyarthritis or polyarthralgias
1982	ACIR82130	Renal scanning as an adjunct in differential diagnosis of renal failure
1982	ACIR82178	Evaluation of saline purge as conventional barium enema preparation in cleansing the colon for air contrast barium enema
1982	ACIR82596	Diagnostic adrenal scanning with 131-I np-59
1983	ACIR83224	Prospective evaluation of clinical, x-ray, histologic, scintigraphic, and microbiologic characteristics of diabetic feet (a multicenter study)

ARMY 1975-1994 (CONTINUED)

William Beaumont Army Medical Center, El Paso, TX (continued)

Start Date	Number	Title
1983	ACIR83559	Combined therapy for multiple myeloma, VMCP-VBAP for remission: VMCP + levamisole vs sequential half-body radiation + vincristine-prednisone for patients who fail to achieve remission status with chemotherapy alone, phase III
1983	ACIR83558	Comparison of aggressive radiotherapy plus chemotherapy vs aggressive chemotherapy in the treatment of limited carcinoma of the pancreas, phase III
1984	ACIR84028	Use of in vitro labeled 99m-Tc red blood cells (RBC) blood pool imaging and computer aided acquisition and processing in localization of upper gastrointestinal (UGI) bleeding sites: A pilot study
1984	ACIR84076	Treatment of limited small cell lung cancer with VP-16/cis-platinum, alternating with vincristine/Adriamycin/cyclophosphamide and radiation therapy, phase I, SWOG 8232
1984	ACIR84522	Improved pregnancy rates after using oil-soluble contrast media (OSCM) for hysterosalpingography (HSG)
1985	ACIR85352	Radionuclide detection and treatment of pulmonary contusion in the pre-clinical state
1985	ACIR85064	Treatment of limited non-small cell lung cancer: Radiation versus radiation plus chemotherapy (FOMI/CAP), phase III, SWOG 8300
1985	ACIR85017	Intergroup - Adjuvant therapy of soft tissue sarcoma with radiation therapy and chemotherapy
1986	ACIR86396	Incidental renal scanning during brain scintigraphy
1986	ACIR86213	Does computerized axial tomography correlate with surgical findings of esophageal tumor?
1986	ACIR86616	Intra-arterial cis-platinum and radiation therapy in primary brain tumors: A phase II randomized study comparing sequential and combined treatments
1986	ACIR86119	Diagnosis of diaphragmatic disruption with Tc-99m-macroaggregated albumin
1987	ACIR87432	Phase III study to determine the effect of combining chemotherapy with surgery and radiotherapy of resectable squamous cell carcinoma of the head and neck, SWOG 8590
1987	ACIR87367	Prospective trial for localized cancer of the esophagus: Comparing radiation as a single modality to the combination of radiation and chemotherapy, phase III

ARMY 1975-1994 (CONTINUED)

William Beaumont Army Medical Center, El Paso, TX (continued)

Start Date	Number	Title
1988	ACIR88324	131-I MIBG compassionate one time use, IND 31, 571
1989	ACIR89712	Evaluation of intraperitoneal chromic phosphate suspension therapy following negative second-look laparotomy for epithelial ovarian carcinoma (stage III), phase III
1990	ACIR90281	Phase I evaluation of multiple daily fraction radiation and 5-fluorouracil plus cisplatin in stage IIb, III, and IVa carcinoma of the cervix with negative para-aortic nodes
1992	ACIR92439	Extended field radiation therapy with concomitant 5-FU infusion and cisplatin chemotherapy in patients with cervical carcinoma metastatic to para-aortic lymph nodes (phase II)
1992	ACIR92167	Phase III randomized study of surgery versus surgery plus adjunctive radiation therapy in intermediate risk endometrial adenocarcinoma, GOG 99
1992	ACIR92437	Randomized comparison of 5-FU infusion & bolus cisplatin as adjunct to radiation therapy, vs radiation alone in patients with stages Ia2, Ib, & IIa carcinoma of the cervix following radical hysterectomy & node dissection, GOG 109
1992	ACIR92441	Whole abdominal radiotherapy versus circadian-timed combination doxorubicin-cisplatin chemotherapy in advanced endometrial carcinoma
1993	ACIR93471	Effect of meal consumption before radionuclide ventriculography
1994	ACIR94007	Phase II study of interferon-modulated indium-111-labeled b72.3 monoclonal antibody (MOAB) scintigraphy in the staging and follow-up of breast cancer patients of poor prognosis

Womack Army Medical Center, Fort Bragg, NC

Start Date	Number	Title
1989	ACIR89004	Clinical testing of the lightweight, Special Forces x-ray system

NAVY 1975-1994

Armed Forces Radiobiology Research Institute, Bethesda, MD

Start Date	Number	Title
1978	NNMC-098	Clinical application of the kidney to aortic blood flow index (K/A ratio)

Balboa Naval Hospital, San Diego, CA

Start Date	Number	Title
1988	NMCSD-277	Protective effects of corticosteriods in contrast material anaphylaxis
Unknown	NMCSD-287	Pretreatment with corticosteroids to alleviate reactions to intravenous contrast material

Cryopharm Corporation, Pasadena, CA

Start Date	Number	Title
1991	ONR-01	Freeze-dried human red blood cells

Geisinger Medical Center, Danville, PA

Start Date	Number	Title
1988	NMCSD-277	Protective effects of corticosteriods in contrast material anaphylaxis

Hamilton General Hospital, Hamilton, Ontario, Canada

Start Date	Number	Title
1988	NMCSD-277	Protective effects of corticosteriods in contrast material anaphylaxis

Ito Thyroid Clinic and Hospital, Tokyo, Japan

Start Date	Number	Title
1976	NMCSD-001	Clinical evaluation of Ga-76 scanning in diagnosis of anaplastic carcinoma and malignant lymphoma in thyroid gland

NAVY 1975-1994 (CONTINUED)

Lawrence Berkeley Laboratory, Berkeley, CA

Start Date	Number	Title
1981	NHOAK-012	All sites, phase I & II protocol of heavy charged particle for locally advanced and or recurrent cancers of mulitple sites and types, NCOG OR81

Lawrence Livermore National Laboratory, Livermore, CA

Start Date	Number	Title
1978	NMRI-04	Tracer gas kinetic studies for decompression table design
1986	NMRI-03	Nitrogen gas exchange in the human knee

Lemuel Shattuck Hospital, Boston, MA

Start Date	Number	Title
1982	NHGL-013	Phase II master protocol for the evaluation of new treatment in patients with advanced soft tissue sarcomas, bone sarcomas and mesothelioma

Louisiana State University Medical Center, New Orleans, LA

Start Date	Number	Title
1988	NMCSD-277	Protective effects of corticosteriods in contrast material anaphylaxis

Marine Corps Recruit Depot, San Diego, San Diego, CA

Start Date	Number	Title
1981	NMCSD-059	Comparative study of cefadroxil vs. cephalexin in treatment of bacterial pneumonia in ambulatory patients
1991	NHRC-04	Use of noninvasive bone structural measurements to evaluate stress fracture susceptibility among selected Marine Corps and Navy populations

National Cancer Institute

Start Date	Number	Title
1975	NHPTS-013	Immunologic evaluation and therapy of patients with carcinoma of the lung

NAVY 1975-1994 (CONTINUED)

National Naval Medical Center, Bethesda, MD

Start Date	Number	Title
1975	NNMC-103	Radioisotopes myelography in detection of spinal fluid leaks due to dorsal column stimulator implantation: Case report
1975	NNMC-104	Patterns of excretion of radioactive chelates in obstructive uropathy
1975	NNMC-034	IgE antipolymyxin B antibody formation in a T-cell depleted bone marrow transplant patient
1975	NNMC-113	Regional lung function with variation of respirator parameters in patients requiring mechanical ventilatory support
1975	NNMC-114	Evaluation of chest therapy by pulmanory function testing and ventilation perfusion scanning in obstructive lung disease
1976	NNMC-110	Chronic pleural thickening: Some observations on cause and pathogenesis
1977	NNMC-101	Efficacy of preoperative and postoperative bone scanning in the management of breast carcinoma
1978	NNMC-099	Transient unilateral hypoperfusion of the lung following mediastinoscopy
1978	NNMC-098	Clinical application of the kidney to aortic blood flow index (K/A ratio)
1978	NNMC-124	Exercise tolerance test
1978	NNMC-145	Clinical application of the kidney to aortic blood flow index (K/A ratio)
1978	NNMC-123	Premature craniosynostosis: Common complication of juvenile thyrotoxicosis
1978	NNMC-127	Radioimmunoassay for 3', 5'-diiodothyronine
1980	NNMC-045	Randomized study of Adriamycin as an adjuvant after surgery and radiation therapy in patients with high risk edometrial carcinoma in stage I and occult stage II
1980	NNMC-128	Thyroid hormone homeostasis in state of relative caloric deprivation
1981	NNMC-111	Effect of exogenous triiodothyronine on the metabolism of carbohydrate, protein and fat in starvation and undernutrition: Effects on lean body mass as measured by K-40
1981	NHPTS-031	Surgical pathologic study of women with invasive carcinoma of the cervix and randomly assigned radiation therapy vs. no further therapy in selected patients, phase III, GOG 49

NAVY 1975-1994 (CONTINUED)

National Naval Medical Center, Bethesda, MD (continued)

Start Date	Number	Title
1981	NNMC-112	Measurement of intragastric digestion and of gastric emptying in peptic ulcer disease
1982	NNMC-077	Treatment of limited small cell bronchogenic carcinoma: Chemotherapy alone or with radiation therapy
1982	NNMC-078	Evaluation of chemohomonal therapy and breast carcinoma patients with no evidence of disease following an exised or curatively irradiated recurrence
1982	NNMC-121	Secondary adrenal insufficiency after intrathecal steroid administration
1982	NNMC-126	Malignant pheochromocytoma
1983	NNMC-076	Monoclonal antibody serotherapy of chronic lymphocytoc leukemia and cutaneous T-cell lymphoma and radioimaging with radiolabeled monoclonal antibody T-101
1983	NNMC-122	Fasting decreases thyrotropin responsiveness to thyrotropin-releasing hormone: Potential cause of misinterpretation of thyroid function tests in critically ill
1984	NNMC-048	Treatment of patients with suboptimal stage Ib carcinoma of the cervix: A randomized comparison of radiation therapy versus radiation therapy plus adjuvant extrafascial hysterectomy
1986	NNMC-133	Inguinal hernia demonstrated incidentally during bone imaging
1987	NNMC-081	Phase III study of indium-111 labeled granulocytes for detection of inflammation process in humans
1987	NNMC-079	Treatment of cutaneous T-cell lymphoma (CTCL) and chronic lymphocytic leukemia (CLL) with yttrium-90 radiolabeled T-101 monocolonal antibody
1987	NNMC-050	Randomized comparison of hydroxyurea versus 5-FU infusion and bolus cisplatin as an adjunct to radiation therapy in patients with stage IIb, III, and IVa carcinoma of the cervix and negative para-aortic nodes
1987	NNMC-049	Phase II study of the treatment of stage III & IV disease of advanced endometrial carcinoma and all stages of papillary serous carcinoma and clear cell carcinoma of the endometrium with total abdominal radiation therapy
1987	NNMC-137	Barrett esophagus: Decreased esophageal clearance shown by radionuclide esophageal scintigraphy

NAVY 1975-1994 (CONTINUED)

National Naval Medical Center, Bethesda, MD (continued)

Start Date	Number	Title
1987	NHPTS-53	Randomized clinical trial for treatment of women with selected stage Ic and II(a,b,c) and selected stage Ial, Ibl, and Ibll ovarian cancer, GOG 95
1988	NNMC-037	Effects of oral therapy with verapamil upon ventricular diastolic function in hypertensive patients
1988	NNMC-051	Phase III randomized study of surgery plus adjunctive radiation therapy in intermediate risk endometrial adenocarcinoma
1988	NNMC-035	SPECT imaging of regional cerebral blood flow
1988	NNMC-075	Scintigraphic characterization of parathyroid glands in chronic renal insufficiency
1988	NNMC-036	Phase III study 131-I metaiodobenzylguanidine sulfate (IBG) for the localization of adrenal medullae of humans
1988	NNMC-074	Randomized study of radical vulvectomy and bilateral groin radiation, phase III
1988	NNMC-131	Spontaneous reduction of testicular torsion during scrotal imaging
1989	NNMC-052	Evaluation of intraperitoneal chromic phosphate suspension therapy following negative second-look laparotomy for epithelial ovarian carcinoma (stage III, phase III)
1989	NNMC-053	Treatment of selected intermediate risk patients with stage Ib carcinoma of the cervix after radical hysterectomy and pelvic lymphadenectomy: Pelvic radiation therapy versus no further therapy
1989	NNMC-038	Phase III study 131-I 6B-iodomethyl-19-norcholestrol (NP-59) for the localization of the adrenal cortex in humans
1989	NNMC-082	Glucose metabolism by positron emission tomography
1989	NNMC-132	Axillary iodine-131 accumulation due to perspiration
1990	NNMC-039	Assessment of the effect of converting enzyme inhibition on proteinuria with steroid unresponsive nephrotic syndrome
1990	NNMC-040	Influence of thyroid disorders and their treatment on nuclear binding of T3 in human leukocytes
1990	NNMC-135	Morphine augmented cholescintigraphy in acute cholecystitis

NAVY 1975-1994 (CONTINUED)

National Naval Medical Center, Bethesda, MD (continued)

Start Date	Number	Title
1991	NNMC-064	ALinC 15: Up-front alternating 6-MP/MTX versus up-front alternating chemotherapy for acute lymphocytic leukemia in childhood
1991	NNMC-080	Randomized study of intensive chemotherapy (MOPP/AVBD) +1-low-dose total nodal radiation therapy in treatment of stages IIb, IIIa2, IIIb, IV Hodgkin's disease in pediatric patients
1991	NNMC-042	Renal and systematic hemodynamic response to the creation of vascular access for hemodialysis in patients with chronic renal failure
1991	NNMC-041	Magnetic resonance and Tc-99m HMPAO SPECT imaging in evolving and completed stroke diffusion/perfusion imaging and metabolite spectroscopy
1991	NNMC-068	Pre-radiation chemotherapy for children with supratentorial malignant gliomas and poorly-differentiated embryonal tumors
1991	NNMC-065	Study of the biological behavior of optic pathway tumors - a phase II study
1991	NNMC-062	Pilot & phase II study of low dose rate chest radiotherapy for treatment of intrathoracic relapse of small cell lung cancer
1991	NNMC-067	Phase I/II dose escalating trial of hyperfractionated irradiation in the treatment of supratentorial malignant tumors of childhood
1991	NNMC-066	Study of childhood soft tissue sarcoma (STS) other than rhabdomyosarcoma and its variants - a pediatric oncology group phase III study
1991	NNMC-058	Randomized comparison of radiation therapy and adjuvant hysterectomy versus radiation therapy and weekly cisplatin and adjuvant hysterectomy in patients with bulky stage Ib carcinoma of the cervix
1991	NNMC-063	Combined therapy and restaging in the treatment of stages I and IIa Hodgkin's disease in pediatric patients - A pediatric oncology group phase III study
1991	NNMC-130	Superior vena cava obstruction in fibrosing mediastinitis: Demonstration of right to left shunt and venous collaterals
1992	NNMC-083	Sensitivity and specificity of MRI-CT arthrography and MRI arthrography for evaluation of shoulder injuries
1992	NNMC-084	Phase I evaluation of intravenously administered 131-I Col-1 monoclonal antibody in patients with advanced carcinoma

NAVY 1975-1994 (CONTINUED)

National Naval Medical Center, Bethesda, MD (continued)

Start Date	Number	Title
1992	NNMC-060	Phase I trial of etoposide and cisplatin plus chest radiotherapy for patients with limited stage small cell lung cancer
1992	NNMC-073	Use of radiocopper in the diagnosis of Wilson's disease
1992	NNMC-056	Whole abdominal radiotherapy versus combination doxorubicin cisplatin chemotherapy in advanced endometrial carcinoma
1992	NNMC-069	Treatment for newly diagnosed low grade astrocytomas
1992	NNMC-055	Randomized comparison of hydroxyurea versus hydroxyurea 5-FU infusion & cisplatin as adjunct radiation therapy in patients with stages IIb, III, & IVa carcinoma of cervix & negative para-aortic nodes
1992	NNMC-043	Association of bone density and menstrual dysfunction with fractures in USNA midshipmen
1992	NNMC-059	Randomized comparison of 5-FU infusion and bolus cisplatin as an adjuvant radiation
1992	NNMC-070	Treatment of first marrow and/or extramedullary relapse childhood acute T-lymphoblastic leukemia and T non-Hodgkin's lymphoma with combination chemotherapy including 2'-deoxycoformycin
1992	NNMC-129	Retained esophageal activity on iodine-131 survey in patient with benign esophageal stricture
1993	NNMC-044	Comparison of ultrasonographic Doppler flow hysterosalpingography with conventional hysterosalpingography
1993	NNMC-071	Clinical trial to evaluate the worth of tamoxifen in conjunction with lymphectomy & breast irradiation for treatment of noninvasive intraductal carcinoma (DCIS) of the breast
1993	NNMC-072	Clinical trial to determine worth of breast radiation in the management of patients with node-negative, occult invasive breast cancer treated by lumpectomy
1993	NNMC-057	Phase II trial of doxorubicin (NSC 123127) and ifosfamide (NSC 11389) in the treatment of recurrent or uterine leiomyosarcomas
1994	NNMC-061	Phase III trial of adjuvant radiotherapy versus adjuvant radiotherapy plus systemic chemotherapy for local and regional neuroendocrine (Merkel) cancer of the skin
Unknown	NNMC-100	Oblique views in lung perfusion scanning: Clinical utility and limitations

NAVY 1975-1994 (CONTINUED)

Naval Acadamy, Annapolis, MD

Start Date	Number	Title
1975	NMCLANNAP-10	Functional instability of ankle joint

Naval Blood Research Laboratory, Boston, MA

Start Date	Number	Title
Unknown	NHCHEL-024	Factors that influence the process of Cr-51 labeling of human granulocytes isolated from blood by counterflow centrifugation

Naval Health Research Center, San Diego, CA

Start Date	Number	Title
1992	NHRC-02	Body composition estimation in females
1994	NHRC-03	Validity of Navy body fat estimation among racial groups

Naval Hospital, Bethesda, MD

Start Date	Number	Title
1975	NHPTS-013	Immunologic evaluation and therapy of patients with carcinoma of the lung
1977	NNMC-102	Phantom kidney in technetium-99m DTPA studies of renal blood flow: Case report

Naval Hospital, Charleston, SC

Start Date	Number	Title
1979	NHCHA-001	Inderal treatment of menopausal vasomotor symptoms

Naval Hospital, Chelsea, MA

Start Date	Number	Title
Unknown	NHCHEL-006	Pathophysiological adaptations in pregnancy: A study of oxygen transport mechanisms in normal and abnormal pregnancy of fetal manifestations of intrauterine hypoxia of dysfunctional labor and of trace metal cadmium as possible factors in hypertensive syndrome

NAVY 1975-1994 (CONTINUED)

Naval Hospital, Great Lakes, IL

Start Date	Number	Title
1975	NHGL-007	Evaluation of the oral surgery patient for IV sedation
1975	NHGL-006	Study of oral cavity during hyperalimentation
1975	NHGL-008	Evaluation of oral surgery implants
1977	NHGL-056	Combination chemotherapy or chemohormonotherapy for recurrent or metastatic breast cancer in pre-menopasual women: Oophorectomy plus CAF vs. CAF without oophorectomy, EST 2177
1977	NHGL-057	Phase II master protocol for evaluation of new agents in patients with esophageal carcinoma, EST 2278
1977	NHGL-049	Evaluation of long-term maintenance therapy for patients in complete remission from metastatic breast carcinoma, EST 1177
1977	NHGL-009	VA cooperative bowel prep study
1977	NHGL-058	Phase II-III master protocol for treatment of advanced pancreatic adenocarcinoma PALA vs. streptozotocin +ADE ADR+ meCCMD (SAM), EST 2279
1977	NHGL-067	Phase III combination chemotherapy with or without consolidation radiation therapy for localized small cell carcinoma of the lung
1978	NHGL-050	Comparative phase III trial of cis-diamine-dichloro-platinum vs. Adriamycin. Cyclophosphamide..and cis-diamine-dichloro-platinum and phase II study of TM-26 in disseminated transition cell carcinoma of the urinary tract, EST 1878
1978	NHGL-059	Adjuvant chemotherapy of soft tissue sarcomas, EST 2377
1980	NHGL-053	Phase II master protocol for evaluation of new agents and combinations in patients with lymphoma, EST 1480
1981	NHGL-054	Combination chemotherapy and radiotherapy for advanced Hodgkin's disease, EST 1481
1981	NHGL-035	Localized radiotherapy vs. localized radiotherapy and chemotherapy vs. localized radiotherapy and half-body thorax
1981	NHGL-051	Phase II-III studies of Adriamycin and 5-FU vs. streptozotocin + 5-FU in the treatment of carcinoid tumor, EST 1291
1981	NHGL-052	Radiotherapy with and without chemotherapy for malignant pleural mesothelioma localized to one hemithorax. An intergroup study, EST 1390

NAVY 1975-1994 (CONTINUED)

Naval Hospital, Great Lakes, IL (continued)

Start Date	Number	Title
1981	NHGL-066	Clinical protocols, rationales and procedures for using two diagnostic drugs, HIDA and DMSA
1982	NHGL-044	Phase III chemohormonal therapy of previously treated metastatic breast cancer in patients with no prior exposure to Adriamycin or tamoxifen
1982	NHGL-042	Phase III adjuvant clinical trial to compare CMFPT to alternating CMF(P)TH and TSAVBTH and short- versus long-term tamoxifen in premenopausal patients with operable N+ breast cancer
1982	NHGL-043	Phase III comparative evaluation of three intensive induction chemotherapy regimens and controlled evaluation of adjuvant radiotherapy consolidation for unfavorable (diffuse) histologic subtypes of non-Hodgkin's lymphoma
1982	NHGL-041	Phase II master protocol for the evaluation of new agents on patients with small cell bronchogenic carcinoma
1982	NHGL-060	Protocol for treatment of lymphoblastic lymphoma in adults, EST 2481
1982	NHGL-045	Phase III combination chemotherapy of advanced breast cancer for women who have received prior tamoxifen, but no prior Adriamycin
1982	NHGL-046	Phase III comparison of cyclophosphamide, Adriamycin, vincristine, to an alternating sequence of CAV and intensive hexamethylmelamine, etoposide (VP-16), methotrexate followed by comparison of maintenance vs. no-maintenance
1982	NHGL-048	Phase III chemohormonal therapy of previously treated metastatic breast cancer in patients with no prior exposure to Adriamycin or tamoxifen: A comparative evaluation of DATH vs. D(DATH)TH, ECOG 7181
1982	NHGL-062	Phase III combined modality treatment protocol for stages III and IV favorable (modular) histologic subtypes of non-Hodgkin's lymphoma, ECOG EST 4477
1982	NHGL-064	Phase III comparative evaluation of 3 intensive induction chemotherapies, ECOG 5477
1982	NHGL-065	Phase III adjuvant therapy for post-menopausal women with breast cancer, ECOG 4181
1982	NHGL-040	Multiple myeloma: Timed sequential high dose cyclophosphamide and vincristine in treatment of multiple myeloma
1982	NHGL-047	Phase II master protocol for evaluation of new agents in treatment of breast cancer

NAVY 1975-1994 (CONTINUED)

Naval Hospital, Great Lakes, IL (continued)

Start Date	Number	Title
1982	NHGL-021	Phase III comparative of soft tissue sarcomas
1982	NHGL-010	Evaluation of long-term maintenance therapy for patients in complete remission from metastatic breast carcinoma
1982	NHGL-011	Adjuvant therapy with tamoxifen vs. placebo in older post-menopausal patients with stage II breast cancer
1982	NHGL-012	Evaluation of adjuvant therapy and biological parameters in node negative operable female breast cancer
1982	NHGL-014	Radiotherapy with and without chemotherapy for malignant pleural mesothelioma localized to one hemithorax, an intergroup study
1982	NHGL-015	Phase III treatment of advanced malignant mesothelioma: Comparison of CIA vs. CA, intergroup II
1982	NHGL-016	Chemotherapy of adrenal cortical carcinoma
1982	NHGL-018	Phase III combination chemotherapy of metastatic breast cancer followed by maintenance or no maintenance therapy: An evaluation of DAVTH as induction regimen
1982	NHGL-027	Phase II master protocol for evaluation of new treatment in patients with malignant melanoma
1982	NHGL-020	Phase II master protocol for evaluation of new agents in patients with esophageal carcinoma
1982	NHGL-039	Phase III protocol for the treatment of favorable non-Hodgkin's lymphomas
1982	NHGL-022	Adjuvant chemotherapy of soft tissue sarcomas
1982	NHGL-023	Phase II study of new agents in treatment of advanced cancer of the head and neck
1982	NHGL-024	Phase III multiple myeloma: Evaluation of combination chemotherapy in previously untreated patients
1982	NHGL-025	Protocol for treatment of lymphoblastic lymphoma in adults
1982	NHGL-033	Phase II and III chemotherapy of advanced soft tissue sarcomas, bone sarcomas, and mesothelioma

NAVY 1975-1994 (CONTINUED)

Naval Hospital, Great Lakes, IL (continued)

Start Date	Number	Title
1982	NHGL-038	Surgical adjuvant protocol for resectable rectal carcinoma modified Duke's B, C1, and CS
1982	NHGL-026	Patients with advanced Hodgkin's disease who have relapsed
1982	NHGL-028	Phase II study of chemotherapy of advanced ovarian cancer using low or high dose cis-diamine-dichloro-platinum
1982	NHGL-029	Phase II master protocol for evaluation of new treatment in patients with endometrial cancer
1982	NHGL-030	Phase II study of disseminated transitional cell carcinoma of urinary tract
1982	NHGL-031	Management of resectable locally advanced primary breast cancer
1982	NHGL-032	Studies in chemotherapy of islet cell carcinoma
1982	NHGL-037	Testicular cancer intergroup study
1982	NHGL-036	Phase II master protocol for evaluation of new agents in treatment of non-small cell bronchogenic carcinoma
1982	NHGL-034	Treatment of acute non-lymphocytic leukemia in elderly: Full dose versus attenuated dose
1982	NHGL-019	Phase II-III evaluation of combination of methyl CCNU, mitomycin-C, Adriamycin, and 5-fluorouracil in advanced measurable gastric cancer

Naval Hospital, Guam

Start Date	Number	Title
1982	GUAM-01	Radionuclide biliary imaging utilizing 99 m-Tc EHIDA

Naval Hospital, Memphis, TN

Start Date	Number	Title
1982	NHMEP-001	Clinical study of intraocular lenses implantation after cataract extraction; Precision-Cosmet

NAVY 1975-1994 (CONTINUED)

Naval Hospital, Naples, FL

Start Date	Number	Title
1980	NHNAP-001	Full thickness skin cultures in betadine scrubbed and betadine sprayed surgical patients

Naval Hospital, Oakland, CA

Start Date	Number	Title
1979	NHOAK-002	Supernumary toe arising from medical cuneiform
1979	NHOAK-001	Localization of Ga-67 citrate in plasma granuloma of lung
1979	NHOAK-004	Functional asplenia after Thorotrast administration
1991	NHOAK-043	Clinical trial to assess the relative efficacy of 5-FU + leucovorin with or without interferon alpha-2a, NSABP C-05
Unknown	NHOAK-005	Gallium-67 uptake in a benign thymic cyst

Naval Hospital, Orlando, FL

Start Date	Number	Title
1976	NHORL-001	Acute respiratory disease in recruits at Naval Training Center, Orlando, Florida
Unknown	NHORL-002	Smoking and lung cancer

Naval Hospital, Philadelphia, PA

Start Date	Number	Title
1975	NHPHIL-013	Evaluation of cardiorespiratory effects of perhexiline in patients with angina pectoris
1975	NHPHIL-017	Behavior of Gaviscon in gastric fundus in erect and supine postition
1975	NHPHIL-018	Study of gastric ulcers
1976	NHPHIL-020	Comparison of four methods of bowel preparation for colonscopy
1976	NHPHIL-021	Efficacy of sucralfate in the treatment of gastric ulcers

NAVY 1975-1994 (CONTINUED)

Naval Hospital, Philadelphia, PA (continued)

Start Date	Number	Title
1976	NHPHIL-019	Phase I-II study using Adriamycin and cis-diamino-dichloro-platinum in advanced solid tumors
1977	NHPHIL-026	Comparison study of ultrasound and oral cholecystography in detecting gallstones
1977	NHPHIL-023	Tamoxifen with and without sequential chemotheraphy for recurrent metastatic breast cancer in patients with positive estrogen receptors
1977	NHPHIL-024	Monoamine oxidase: Clinical use as a indicator of incipient hepatic fibrosis
1977	NHPHIL-025	Study of the effect of jogging on cardiorespiratory fitness of alchoholics in the NRMC Alcohol Rehab Unit
1981	NHPHIL-022	Effect of combination oral contraceptives on hephrogenous cyclic adenosine monophosphate

Naval Hospital, Portsmouth, VA

Start Date	Number	Title
1975	NHPTS-013	Immunologic evaluation and therapy of patients with carcinoma of the lung
1975	NHPTS-012	Protocol for the use of Adriamycin in certain metastatic malignant tumors
1975	NHPTS-011	Protocol for the treatment of acute myelocytic leukemia and related disorders. Number PWH001
1975	NHPTS-010	Closed internal fixation of fractures using the image intensifier
1975	NHPTS-009	Participation in acute leukemia group B (ALGB)
1975	NHPTS-002	Closed internal fixation of fractures using image intensifier control
1976	NHPTS-70	Treatment of chronic osteomyelitis with hyperbaric oxygenation
1976	NHPTS-015	Evaluation of freeze-dried bone in the treatment of periodontal osseous defects
1976	NHPTS-014	Clinical use of a hypothalamic releasing hormone: Gonadotropin-releasing hormone
1977	NHPTS-021	Minoxidil as an antihypertensive in patients refractory to available medications

NAVY 1975-1994 (CONTINUED)

Naval Hospital, Portsmouth, VA (continued)

Start Date	Number	Title
1977	NHPTS-017	Study of gastric ulcers, NHPTS-17
1977	NHPTS-018	Use of Ca(OH)2 to prevent, arrest and/or reverse the external and/or resorption of teeth following their luxation or avulsion
1977	NHPTS-019	Platinum-Adriamycin therapy
1977	NHPTS-71	Chemoluminotherapy of carcinoma of lung using high dose methotrexate and BCG
1977	NHPTS-016	Classification and treatment of fractures of the base of the fifth metacarpal
1978	NHPTS-022	Immunologic evaluation and phase I immunotherapy trial in patients with carcinoma
1979	NHPTS-73	Cardiovascular dynamics of toxemia of pregnancy. Effects of magnesium sulfate therapy and epidural anesthesia
1979	NHPTS-74	Urinary tract evaluation of DES exposed progeny
1979	NHPTS-023	Extracranial cerebrovascular reconstruction-cerebral blood flow and neuro-psychological function
1981	NHPTS-031	Surgical pathologic study of women with invasive carcinoma of the cervix and randomly assigned radiation therapy vs. no further therapy in selected patients, phase III, GOG 49
1981	NHPTS-024	An adjuvant clinical trial to compare cytoxan, methotrexate, 5-FU (CMF) to CMF, prednisone (CMFP) with or without tamoxifen in premeopausal women with stage II breast cancer, ECOG EST 5177, phase III
1982	NHPTS-75	Use of electrospinal instrumentation in idiopathic scoliosis
1982	NHPTS-76	Computerized axial tomography versus complex motion tomography as predictor of surgical finding to middle ear and mastoid cholesteotoma
1983	NHPTS-025	Evaluation of adjuvant vincristine, dactinomycin, and cyclophosphamide therapy in malignant germ cell tumors of the ovary after resection of all gross tumor, GOG 44
1983	NHPTS-032	Study of Adriamycin as postoperative therapy of ovarian carcinomas, GOG 50
1984	NHPTS-36	Treatment of previously untreated acute lymphoblastic leukemia for pediatric patients with unfavorable prognostic features, CCSG-193

NAVY 1975-1994 (CONTINUED)

Naval Hospital, Portsmouth, VA (continued)

Start Date	Number	Title
1986	NMCSD-125	Utility of endoscopy for x-ray negative dysphagia: A prospective analysis
1987	NHPTS-97	Phase II trial of hexamethlymelamine (MSC 13875) in patients with advanced or recurrent endometrial carcinoma
1987	NHPTS-58	Phase II evaluation of preoperative chemoradiation for advanced vulvar cancer, GOG 101
1987	NHPTS-52	Phase III trial of high vs. intermediate dose medroxyprogesterone acetate (MPA) in patients with advanced or recurrent endometrial carcinoma with unknown estrogen and progesterone levels, GOG 81E
1987	NHPTS-54	Phase I-II trial of medroxyprogesterone acetate (MPA) in patients with advanced or recurrent endometrial carcinoma negative for estrogen and progesterone receptors, GOG 81C
1987	NHPTS-53	Randomized clinical trial for treatment of women with selected stage Ic and II (a,b,c) and selected stage Ial, Ibl, and Ibll ovarian cancer, GOG 95
1987	NHPTS-86	Treatment of selected patients with stage Ib carcinoma of the cervix, GOG 92
1988	NHPTS-57	Phase II trial of gallium nitrate in patients with advanced squamous cell carcinoma of cervix, GOG 76F
1988	NHPTS-89	Thyroid dysfunction following therapy for the head and neck
1988	NHPTS-61	Lateral tomograms of scaphoid
1988	NHPTS-60	Diagnosis of sarcoidosis: Correlation of gallium-67 scanning, minor salivary biopsy, parotid gland biopsy, and transbronchial lung biopsy
1988	NHPTS-59	Effect of radiation therapy on serum angiotensin converting enzyme levels in patients with bronchogenic carcinoma
1988	NHPTS-62	Utility of endoscopy for x-ray negative dysphagia: Prospective analysis
1990	NHPTS-92	Effect of race in responsiveness to atrial natriuretic peptide
1990	NHPTS-81	C-reactive levels in asthma
1990	NHPTS-63	Spontaneous pneumothorax: Treatment using standard tube thoracostomy vs. Cook catheter with a Ueimlich valve

NAVY 1975-1994 (CONTINUED)

Naval Hospital, Portsmouth, VA (continued)

Start Date	Number	Title
1990	NHPTS-90	Effect of the addition of electrical stimulation on the examination of lumbar fusion rates in patients
1991	NHPTS-66	Phase III randomized study of surgery vs. surgery plus adjunctive radiation therapy in intermediate risk endometrial adenocarcinoma, GOG 99
1991	NHPTS-65	Phase I evaluation of multiple daily fraction radiation and hydroxyurea in patients with stage IIb, III, and IVa carcinoma of cervix and negative para-aortic nodes, GOG 8801
1991	NHPTS-85	High resolution CT in evaluation of hemoptysis
1991	NHPTS-64	Phase I evaluation of multiple daily fraction radiation and 5-fluorouracil plus cisplatin in stage IIb, III, and IVa carcinoma of cervix with negative para-aortic nodes, GOG 8901
1992	NHPTS-68	Extended field radiation therapy with concomitant 5-FU infusion and cisplatin chemotherapy in patients with cervical carcinoma metastatic para-aortic lymph nodes, GOG 125
1992	NHPTS-69	Randomized comparison of hydroxyurea vs. hydroxyurea 5-FU infusion and bolus cisplatin vs. weekly cisplatin adjunct to radiation therapy in patients with stages IIb, III, IVa carcinoma of cervix and negative para-aortic nodes, GOG 120
1993	NHPTS-88	Adjuvant ifosfamide (NSC 109724) and mesna..., GOG 117

Naval Hospital/Medical Center, San Diego, CA

Start Date	Number	Title
1975	NMCSD-017	Angiographic analysis of left ventricular mechanics in young patients with atypical chest pain and ischemic disease
1975	NMCSD-019	Abnormalities involving alternative pathway in urticaria or angioedema
1975	NMCSD-251	Postresection irradiation for primary lung cancer
1975	NMCSD-250	Afterloading interstitial implant in the treatment of oral cavity and oropharyngeal cancers (1977)
1975	NMCSD-267	Thyroid uptake of I-131: Further comparisons of capsules and liquid preparations

NAVY 1975-1994 (CONTINUED)

Naval Hospital/Medical Center, San Diego, CA (continued)

Start Date	Number	Title
1976	NMCSD-026	Effect of hyperthyroidism on serum gastrin and gastric acid production before and after treatment
1976	NMCSD-025	Distribution of ventilation/perfusion ratios in acute and chronic cardiopulmonary disease
1976	NMCSD-023	Bone and gallium scanning in evaluation of disseminated coccidiomycosis
1976	NMCSD-020	Clinical trial to compare combination chemotherapy with and without C. parvum in management of patients with surgically curable breast cancer who have one or more axillary nodes
1976	NMCSD-022	Use of 99m Tc-pyrophospate bone scanning in early detection of stress fractures
1976	NMCSD-021	Detection of pericardial effusion by echocardiography in hypothyroid patients
1976	NMCSD-276	Thyroid uptake of I-131: Further comparisons of capsules and liquid preparations
1977	NMCSD-246	Current status and recent advances in the radiotherapy of lung cancer
1977	NMCSD-248	Persistent carcinoma of the oropharynx and oral cavity retreated by afterloading interstitial 192 Ir implant
1977	NMCSD-268	Functional evaluation of a hepatic scintigraphic defect using ultrasound and a fatty meal
1977	NMCSD-269	Bone scanning in the evaluation of exercise related stress injuries
1977	NMCSD-027	Vasodilated excretory urography - a diagnostic approach to renovascular hypertension
1977	NMCSD-028	Contrast media reactions - role of histamine, complement, and dilutional skin tests
1977	NMCSD-030	Combination chemotherapy of disseminated testicular carcinoma with cis-diamino-dichloro-platinum with diuresis, bleomycin
1977	NMCSD-029	Pilot study for treatment of previously untreated brain tumor in children
1978	NMCSD-247	Iridium-192 afterload implant in the retreatment of head and neck cancers
1978	NMCSD-034	Efficacy of corticosteroid in treatment of acute asthma

NAVY 1975-1994 (CONTINUED)

Naval Hospital/Medical Center, San Diego, CA (continued)

Start Date	Number	Title
1978	NMCSD-036	Adjuvant immunotherapy in stage I non-oat cell lung carcinoma
1978	NMCSD-245	Primary treatment of carcinoma of the lower rectum and anal canal by a combination of external irradiation and interstitial implant
1978	NMCSD-033	Comparison of three iodinated contrast media for excretory urography
1978	NMCSD-032	Clinical trial to evaluate postoperative immunotherapy and postoperative systemic chemotherapy in the management of resectable colon cancer, NSABP C-01
1978	NMCSD-031	Clinical trial to evaluate postoperative radiation and postoperative systemic chemotherapy in management of resectable rectal carcinoma, NSABP R-01
1978	NMCSD-035	Usefulness of computerized axial tomography in evaluation of pulmonary metastases
1979	NMCSD-263	Functional asplenia after Thorotrast
1979	NMCSD-244	Uterine cervical cancer: Treatment with megavoltage radiation results and afterloading intracavity techniques
1979	NMCSD-241	Nuclear angiocardiogram to demonstrate right atrial myxoma
1979	NMCSD-240	Localization of Ga-67 citrate in plasma cell
1979	NMCSD-257	Splenic artifact caused by barium in the colon
1979	NMCSD-038	Treatment of lower respiratory tract infection with ceforanide vs. cefazolin
1979	NMCSD-260	Evaluation of abdominal mass in a child (letter)
1979	NMCSD-039	Evaluation of a new cephalosporin, HR-756, in treatment of infections caused by susceptible bacteria
1979	NMCSD-037	Bone scanning in evaluation of stress fractures
1979	NMCSD-082	A-COP plus for non-Hodgkin's lymphoma in children
1980	NMCSD-239	Focal increased lung perfusion and intrapulmonary veno-arterial shunting in broncho-alveolar cell carcinoma
1980	NMCSD-243	Scintiscan detection of splenic arteriovenous fistulae

NAVY 1975-1994 (CONTINUED)

Naval Hospital/Medical Center, San Diego, CA (continued)

Start Date	Number	Title
1980	NMCSD-046	Ventilatory function after flail chest injury
1980	NMCSD-041	Evaluation of ketoconazole in treatment of systemic mycoses
1980	NMCSD-042	Controlled study on use of dopamine in neonatal asphyxia
1980	NMCSD-047	Combination chemotheraphy of diffuse malignant pleural mesothelioma with either Adriamycin and Cytoxan or Cytoxan, Oncovin, methotrexate, and 5-fluorouracil
1980	NMCSD-256	Value of total body scan in a child with osteomyelitis
1980	NMCSD-264	Gallium-67 uptake in a benign thymic cyst
1980	NMCSD-043	Evaluation of profile changes following vestibuloplasty techniques
1980	NMCSD-044	National study of contrast media reactions
1980	NMCSD-048	Radionuclide biliary imaging utilizing 99m Tc-PIPIDA
1980	NMCSD-045	Quantitative assessment of facial soft tissue response following use of methylprednisolone after singular orthognathic surgical procedures
1980	NMCSD-049	Ventilation changes resulting from drainage and pleurodesis for malignant pleural effusion
1980	NMCSD-050	Terminal deoxynucleotidyl transferase (TdT) immunofluorescence of bone marrow smears
1980	NMCSD-040	Phase III clinical investigation of indium DTPA for cisternography
1981	NMCSD-063	Combination chemotherapy of multiple myeloma, CALGB 7761
1981	NMCSD-054	Protocol to compare Alkeran (L-PAM) and 5-fluorouracil (5-FU) + tamoxifen with/without Adriamycin in the management of patients with primary breast cancer and positive axillary nodes whose tumors are positive for estrogen receptor, NSABP B-12
1981	NMCSD-061	Establishment of radioimmunoassay for measuring human immunoglobulin
1981	NMCSD-053	Protocol to compare Alkeran (L-PAM) + 5-fluorouracil (5-FU) with and without Adriamycin in the management of patients with primary breast cancer and positive axillalry nodes whose tumors are negative for estrogen receptors, NSABP B-11

NAVY 1975-1994 (CONTINUED)

Naval Hospital/Medical Center, San Diego, CA (continued)

Start Date	Number	Title
1981	NMCSD-060	Serial angiographic assessment of effect of risk factor modification in young active duty Navy men
1981	NMCSD-059	Comparative study of cefadroxil vs. cephalexin in treatment of bacterial pneumonia in ambulatory patients
1981	NMCSD-058	Combination chemotherapy, whole-body radiotherapy, and non-cross resistant chemotherapy for small cell carcinoma of the lung, extensive disease
1981	NMCSD-057	Double-blind controlled study comparing indomethacin and placebo in prevention of radiation esophagitis
1981	NMCSD-056	Radionuclide biliary imaging utilizing 99m-Tc-P-butyl-IDA
1981	NMCSD-055	Randomized controlled trial of indomethacin, PGI2, heparin in acute phase of cerebral ischemia
1981	NMCSD-052	A protocol to compare segmental mastectomy and axillary dissection with and without radiation of the breast and total mastectomy and axillary dissection
1981	NMCSD-064	Protocol for clinical evaluation of percutaneous coronary angioplasty
1981	NMCSD-062	Comparative effectiveness of combination chemotherapy alone or with radiation therapy to involved field or extended field, in poor risk patients with stage I and II Hodgkin's disease
1981	NMCSD-051	Surgical adjuvant chemotheraphy of stage II breast cancer: Two CMFVP regimens with or without subsequent Adriamycin combination
1981	NMCSD-255	Gallium-67 citrate imaging of pyomyositis
1981	NMCSD-272	Preoperative whole pelvic external irradiation in stage I endometrial cancer
1982	NMCSD-242	Accumulation of MDP in hepatic metastases
1982	NMCSD-065	Use of VP16-213 in combination with cisplatin for treatment of recurrent testicular cancer in a single patient
1982	NMCSD-258	Hot spot on perfusion lung scan produced by bronchiolo-aveolar cell carcinoma
1982	NMCSD-067	Chemotherapy of advanced pancreatic cancer - a comparative phase II study
1982	NMCSD-072	Comparative study of high dose ara-C alone or given sequentially with L-asparaginase for remission induction in patients with acute myelogenous leukemia after failure of initial induction or in relapse

NAVY 1975-1994 (CONTINUED)

Naval Hospital/Medical Center, San Diego, CA (continued)

Start Date	Number	Title
1982	NMCSD-068	Study of effectiveness of intensification with two courses of cytosine arabinoside and daunorubicin following remission induction with acute lymphocytic leukemia
1982	NMCSD-069	Randomized study comparing combination of hormonal therapy and chemotherapy with chemotherapy alone for treatment of advanced breast cancer in women
1982	NMCSD-070	Surgical adjuvant chemotherapy of stage II breast cancer; two CMFVP regimens with or without subsequent Adriamycin combination
1982	NMCSD-081	Intergroup rhabdomyosarcoma (RMS) study II (IRS 2)
1982	NMCSD-278	Nonoperative management of delayed splenic rupture in an adult
1982	NMCSD-073	Vinblastine, DTIC and cis-platinum (DDP) in treatment of advanced or recurrent metastatic malignant melanoma
1982	NMCSD-066	Emergency use of investigational drug VM-26 monooctanoin in case of a single patient
1982	NMCSD-079	Evaluation of light scanning as a new modality for screening women for breast cancer
1982	NMCSD-083	Intermittent high dose cytarabine for treatment of colorectal adenocarcinoma: A phase II study
1982	NMCSD-084	Stress fracture as the etiology of acute chondromalacia, patella (CMP)
1982	NMCSD-078	Continuous infusion vinblastine with bleomycin and cisplatin for treatment of cancers of upper digestive tract and lung
1982	NMCSD-071	Localized small cell carcinoma of lung - a phase II study of simultaneous chemotherapy and radiotherapy vs. sequential therapy vs. chemotherapy alone
1982	NMCSD-074	Therapy of chronic myelogenous leukemia in blast crisis with 5-azacytidine plus VP-16-213
1982	NMCSD-279	Non-cross resistant chemotherapy and consolidation radiotherapy for small cell carcinoma of the lung
1982	NMCSD-077	Combination chemotherapy with mastectomy or radiotherapy for stage III breast carcinomas

NAVY 1975-1994 (CONTINUED)

Naval Hospital/Medical Center, San Diego, CA (continued)

Start Date	Number	Title
1982	NMCSD-075	Clinical trial to assess sequential methotrexate + 5-fluorouracil in patients with primary breast cancer and negative axillary nodes whose tumors are negative for estrogen receptors, NSABP B-13
1982	NMCSD-076	Clinical trial to assess tamoxifen in patients with primary breast cancer and negative axillary nodes whose tumors are positive for estrogen receptors, NSABP B-14
1983	NMCSD-259	Abnormal perfusion scan due to intrathoracic stomach and colon
1983	NMCSD-274	Distribution and natural history of stress fractures in U.S. Marine recruits
1983	NMCSD-095	Indium-111 oxide labeled granulocytes for detection of inflammatory process in humans
1983	NMCSD-094	Nonalcoholic liver disease in alcoholics
1983	NMCSD-093	Phase I study of indium-111 labeled murine monoclonal antibody for external photoscanning of melanoma and other tumors
1983	NMCSD-096	Use of isotretinoin in prevention of basal cell carcinoma
1983	NMCSD-091	Effect of verapamil on patients with irritable bowel syndrome (IBS) who have diarrhea with or without abdominal pain
1983	NMCSD-090	Randomized phase II trial of cytosine arabinoside (ara-C) and platinum (CDDP) vs. vinblastine (VLG) and platinum (CDDP) in advanced non-small cell lung carcinoma
1983	NMCSD-088	Therapy of CML in blast crisis with 5-azacytidine plus VP-16-213
1983	NMCSD-087	Emergency use of cis-platinum (DDP), vindesine (DVA), and bleomycin in treatment of esophageal carcinoma
1983	NMCSD-086	Treatment of advanced Hodgkin's disease: A randomized phase III trial comparing MOPP vs. ABVD vs. MOPP alternating with ABVD, CALGB 8251
1983	NMCSD-095	Indium-111 oxide labeled granulocytes for detection of inflammatory process in humans
1983	NMCSD-085	Comparative study of two remission induction regimens of ara-C for acute myelogenous leukemia: A phase III study, CALGB 8321

NAVY 1975-1994 (CONTINUED)

Naval Hospital/Medical Center, San Diego, CA (continued)

Start Date	Number	Title
1983	NMCSD-092	Computed tomography and peritoneal lavage in determining severity of visceral injury after blunt abdominal trauma
1983	NMCSD-089	Combination chemotherapy for metastatic recurrent cancer of breast. A randomized phase III trial comparing CAFVATH vs. VATH alternating with CMFVP
1984	NMCSD-105	Cytosine arabinoside and cisplatin for advanced stage breast cancer
1984	NMCSD-104	Mitomycin-C and cisplatin vs. Adriamycin and cisplatin for malignant mesothelioma, phase II
1984	NMCSD-103	Regional stage III NSCLC chemotherapy and radiation therapy vs. radiation therapy alone
1984	NMCSD-101	Approval of final case report on emergency use of investigational drugs methyl-GAG and ifosphamide
1984	NMCSD-100	Emergency drug use of investigational drug AZQ ICO (name redacted)
1984	NMCSD-106	Cold cardioplegia - effects on phrenic nerve conduction, diaphragm motion, and lung volumes
1984	NMCSD-102	Carboplatin (CBDCA) vs. iproplatin (CHIP) in advanced non-small cancer lung carcinoma, phase II
1984	NMCSD-107	Diagnostic utility of bone scans in sarcoidosis and correlation of bone involvment with disease activity
1984	NMCSD-282	Residual tumor following radiotheraphy for locally advanced carcinomas of the uterine cervix. Progonostic significance
1984	NMCSD-097	Protocol for evaluation of radical mastectomy and total mastectomy with and without radiation in the primary treatment of cancer of the female breast, NSABP B-04
1984	NMCSD-273	Should single phase radionuclide bone imaging be used in suspected osteomyelitis?
1984	NMCSD-281	Anxiety and cancer treatment: Response to stressful radiotherapy
1984	NMCSD-283	Radioimmunodetection of melanoma utilizing In-111 96.5 monoclonal antibody: A preliminary report (1985)

NAVY 1975-1994 (CONTINUED)

Naval Hospital/Medical Center, San Diego, CA (continued)

Start Date	Number	Title
1984	NMCSD-098	Clinical trial to compare L-PAM with L-PAM and 5-FU in management of primary breast cancer in patients who have one or more postitive nodes
1984	NMCSD-099	Clinical trial to compare L-PAM and 5-FU vs. L-PAM and 5-FU and methotrexate in management of patients with primary breast cancer who have one or more positive axillary nodes, NSABP B-08
1984	NMCSD-280	Questionable role of computed tomography in preoperative staging of esophageal cancer
1985	NMCSD-117	Treatment of calcinosis circumscripta with probenecid - pilot study
1985	NMCSD-118	One time use of an investigational drug, absolute alcohol, on a single patient in case of (name redacted)
1985	NMCSD-116	Comparison of four methods of measuring extension of lumbar spine
1985	NMCSD-115	Non-emergency use of an investiagational procedure in case of (name redacted)
1985	NMCSD-114	Forwarding HSETC information re: Emergency use of VM-26 in case of (name redacted)
1985	NMCSD-109	Three arm clinical trial comparing short intensive Adriamycin-cyclophosphamide with or without interval reinduction chemotherapy (CMF) to conventional chemotherapy (CMF) in positive node patients who are ages 49 or younger, six months, NSABP B-15
1985	NMCSD-110	Three arm clinical trial comparing tamoxifen alone with short intensive Adriamycin-cyclophoshamide + tamoxifen in node positive patients with positive progesterone assays who are aged 50 to 59 or greater than 59 regardless of PR status, NSABP B-16
1985	NMCSD-112	Approval of the final report on emergency use of investigational drug cyanocrylate
1985	NMCSD-111	National intergroup protocol for intermediate thickness melanomas 1.0 to 4.0 mm
1985	NMCSD-108	Adjuvant CDF for pathologic stage II breast cancer: Randomization among intensive CDF for four months vs. standard dose CDR for six months
1985	NMCSD-113	One time emergency use of investigational agent cisplatin/thiosulfatein case of (name redacted)

NAVY 1975-1994 (CONTINUED)

Naval Hospital/Medical Center, San Diego, CA (continued)

Start Date	Number	Title
1985	NMCSD-254	Influence of field size, treatment of modality, commissure involvement, and histology in the treatment of early vocal cord cancer with irradiation
1985	NMCSD-119	Fever and bacteremia following bronchoscopy: Prospective study to determine frequency, source of bacteria, and implications for endocarditis prophylaxis
1986	NMCSD-262	Cytomegalovirus infection, ascending myelitis, and pulmonary embolus (letter)
1986	NMCSD-127	Trimetrexate (NSC 352122) for non-Hodgkin's lymphoma, phase II, CALGB 8651
1986	NMCSD-126	Management strategies on risk after acute myocardial infarction
1986	NMCSD-125	Utility of endoscopy for x-ray negative dysphagia: A prospective analysis
1986	NMCSD-123	Echinomycin for advanced breast cancer: A phase II study
1986	NMCSD-235	T-cell 3 pilot study: POG 8691
1986	NMCSD-238	Phase III comparative study of post-remission intensive ara-C in patients with acute non-lymphocytic leukemia in first remission, CALGB 8525
1986	NMCSD-234	Analysis of proto-oncogene expression in acute nonlymphocytic leukemia, CALGB 8765
1986	NMCSD-236	Evaluation of treatment regimens in acute lymphoid leukemia of childhood: POG 8602
1986	NMCSD-024	NSABP 4 (this is the Navy's substitute for the absence of a title)
1986	NMCSD-124	Combination chemotherapy for remission induction and maintenance for recurrent CLL occuring six months or greater after elective cessation of therapy-Hodgkin's lymphoma and children with occult testicular LL after 3 years continuous complete remission
1986	NMCSD-122	Phase III trial of intensive treatment for adult acute lymphocytic leukemia: A comparison of combination chemotherapy plus alternating mitoxantrone and daunorubicin vs. combination chemotherapy plus daunorubicin
1986	NMCSD-120	Investigation agent status report (ifosphamide, VP-16)
1986	NMCSD-121	Clinical trial to evaluate natural history and treatment of patients with non-invasive intraductal adenocarcinoma, NSABP B-17

NAVY 1975-1994 (CONTINUED)

Naval Hospital/Medical Center, San Diego, CA (continued)

Start Date	Number	Title
1986	NMCSD-271	Technique for multiplanar reformation and three dimensional analysis of computed tomographic data: Application to adult hip disease
1987	NMCSD-140	Dose range study of recombinant gamma interferon in treatment of NSCLC assessing disease response and serial measurements of immunomodulatory effects, phase II
1987	NMCSD-139	Randomized comparison of m-BACOD and CHOP combination chemotherapy in advanced stage diffuse large cell (histiocytic) and diffuse mixed non-Hodgkin's lymphoma
1987	NMCSD-141	Recombinant beta-interferon in advanced NSCLC: A phase II study
1987	NMCSD-135	Epidemiologic study of the etiologic agents of pneumonia among recruits at Recruit Training Center, San Diego and the utility of rapid diagnosis
1987	NMCSD-138	Carboplatin for malignant mesothelioma, phase II
1987	NMCSD-137	5-Axacytidine to induce differentiation in myelodysplastic syndromes, phase I-II study
1987	NMCSD-136	Pulmonary function test in normal Filipino males
1987	NMCSD-142	Comprehensive therapy to Ewing's sarcoma: Tailored vs standard radiation therapy
1987	NMCSD-134	Dose response trial of megestrol acetate in advanced breast cancer, phase III study, CALGB 8741
1987	NMCSD-237	Etoposide, vinblastine, doxorubican (EVA) as the primary treatment of advanced Hodgkin's disease in relpase from MOPP or MOPP variants, phase II, CALGB 8751
1987	NMCSD-261	Polyorchidism: Evaluation by MR
1987	NMCSD-128	Combination chemotherapy with intensive ACE/PCE and radiation therapy to primary tumor and prophylactic whole-brain radiation therapy with or without warfarin in limited small cell carcinoma of lung, phase III, CALGB 8534
1987	NMCSD-129	Epidemiology of acute leukemias in adults with special reference to cytogenetically determined subgroups, CALGB 8661
1987	NMCSD-130	Combination chemotherapy for advanced Hodgkin's disease, CALGB 8695

NAVY 1975-1994 (CONTINUED)

Naval Hospital/Medical Center, San Diego, CA (continued)

Start Date	Number	Title
1987	NMCSD-131	Cyclophosphamide vs. cyclophohsphamide plus alpha-2 interferon in treatment of follicular, low grade lymphomas, phase III, CALGB 8691
1987	NMCSD-132	Master protocol to study single agent induction chemotherapy vs. standard chemotherapy for stage IV breast carcinoma, phase III, CALGB 8642
1987	NMCSD-133	Recombinant interleukin-2 and b-interferon for relapsed or refractory lymphoma - limited access phase II study, CALGB 8653
1988	NMCSD-166	Effects of terfenadine alone and in combination with ipratropium bromide on pulmonary, cardiovascular and cognitive function in military personnel with mild or moderate asthma
1988	NMCSD-145	Clinical trial to compare adjuvant leucovorin and 5-FU (LU+5-FU) with adjuvant meCCNU, vincristine and 5-FU (MOF) in patients with Dukes' B and C colon cancer, NSABP C-03
1988	NMCSD-149	Management of stress fractures with a pneumatic leg brace
1988	NMCSD-152	PACE and gamma recombinant beta interferon in advanced non-small cell lung cancer, phase II study
1988	NMCSD-151	Treatment of advanced Hodgkin's disease with model C followed by MVPP: Limited access pilot study
1988	NMCSD-150	Utility of urinalysis in screening for occult renal injury in patients with minor trauma
1988	NMCSD-162	Studies of thrombocytopoiesis in patients with myeloproliferative disorders
1988	NMCSD-155	Trial of cystectomy alone vs. neoadjunvant M-VAD + cystectomy in patients with locally advanced bladder cancer
1988	NMCSD-148	Treatment of children with newly diagnosed ANLL using high dose cytosine arabinoside and etoposide + 5-azacytidine for intensification of early therapy
1988	NMCSD-146	Incidence of deep venous thrombosis in major oral and maxillofacial surgical patients
1988	NMCSD-147	Ceftriaxone for outpatient management of suspected occult bacteremia: A multicenter cooperative study
1988	NMCSD-144	PAGE and gamma interferon for extensive small cell carcinoma of lung

NAVY 1975-1994 (CONTINUED)

Naval Hospital/Medical Center, San Diego, CA (continued)

Start Date	Number	Title
1988	NMCSD-143	Emergency one time use of rifampin on single patient
1988	NMCSD-277	Protective effects of corticosteriods in contrast material anaphylaxis
1989	NMCSD-160	Unified trial to compare short intensive preoperative systemic Adriamycin cyclophosphamide therapy with similar therapy administered in conventional postoperative fashion, NSABP B-18
1989	NMCSD-165	Protocol for prospective correlative clinical trial of the anti-cancer drug response assay-recurrent breast cancer treated with Adriamycin
1989	NMCSD-161	Clinical trial to determine the worth of tamoxifen and worth of breast radiation in management of patients with node-negative, clinically occult, invasive breast cancer treated by lumpectomy, NSABP B-21
1989	NMCSD-163	Fundarabine phosphate in patients with refractory CLL (National Cancer Institute protocol 189-0018), GRPC Protocol
1989	NMCSD-167	Treatment of acute infectious arthritis in adults: A prospective comparison of drainage methods
1989	NMCSD-164	Abrogation of drug resistance to cisplatin and 5-fluorouracil in patients with metastatic colorectal cancer through the use of diltiazem
1989	NMCSD-157	CHOPE/ABVD for advanced Hodgkin's disease: Limited access phase II study, CALGB 8856
1989	NMCSD-159	Clinical trial to compare sequential methotrexate 5-FU (M-F) with conventional CMF in primary cancer patients with negative nodes and estrogen negative tumors, NSABP B-19
1989	NMCSD-154	Pilot study of cyclophosphamide, doxorubicin, vincristine, prednisone, etoposide (CHOPE) in diffuse lymphomas, CALGB 8852
1989	NMCSD-233	Trial of shortened therapy without maintenance for treatment of localized non-Hodgkin's lymphoma: A phase III study, POG 8719
1989	NMCSD-156	Phase II trial of a 5-drug induction regimen with intensive consolidation in adult lymphoblastic leukemia, CALGB 8811
1989	NMCSD-284	Acute myelofibrosis: Correlation of radiographic, bone scan, and biopsy findings
1989	NHOAK-039	Clinical trial to determine the worth of chemotherapy and tamoxifen over tamoxifen alone in the management of patients with primary invasive breast cancer, negative axillary nodes, and estrogen receptor positive tumors, NSABP B-20

NAVY 1975-1994 (CONTINUED)

Naval Hospital/Medical Center, San Diego, CA (continued)

Start Date	Number	Title
1989	NMCSD-175	Utility of endoscopy for x-ray negative dysphagia: A prospective analysis
1990	NMCSD-265	Clinical manifestations of essential thrombocythemia in young adults
1990	NMCSD-232	Dose response trial of megestrol acetate for treament of cachexia in patients with advanced lung or colorectal cancer, CALGB 8971
1990	NMCSD-177	Method of diagnosis of cartilaginous and ligamentous knee injuries associated with lower extremity fractures using physical exam, stress radiographs, and magnetic resonance imaging
1990	NMCSD-176	Single-dose cefotetan or cefoxitin vs. multiple dose cefoxitin as prophylaxis in patients undergoing appendectomy for non-perforated appendicitis
1990	NMCSD-168	Phase III comparison of adjuvant chemotherapy with or without endocrine therapy in high-risk, node-negative breast cancer patients, CALGB 8897
1990	NMCSD-169	Phase III chemotherapy of disseminated advanced stage testicular cancer with cisplatin plus etoposide with either bleomycin or ifosfamide, CALGB 8991
1990	NMCSD-170	Conservative treatment of adenocarcinoma of the distal rectum: Local resection plus adjuvant 5-FU/radiation therapy, phase II, CALGB 8984
1990	NMCSD-171	Phase II study of etoposide, vinblastine, doxorubicin (EVA) and subtotal nodal radiation in poor risk, early stage Hodgkin's disease, CALGB 9051
1990	NMCSD-172	PA clinical trial to evaluate the effect of dose intensification and increased cumulative dose postoperative Adriamycin-cyclophosphamide (AC) therapy on disease-free survival, NSABP B-22
1990	NMCSD-174	National Wilms' tumor study, POG 8650
1990	NMCSD-178	Use of magnetic resonance imaging to prospectively evaluate healing ability of scaphoid fractures
1990	NHOAK-040	Clinical trial to assess the relative efficacy of 5-FU + leucovorin, 5-FU + levamisole, and 5-FU, leucovorin + levamisole in patients with Dukes' B and C carcinoma of the colon, NSABP C-04
1991	NMCSD-195	Intergroup postoperative adjuvant interferon alpha-2b in resected high-risk primary and regionally metastatic melanoma, CALGB 9190
1991	NMCSD-188	Phase III comparison of combination chemotherapy (CAF) and chemo-hormonal therapy (CAF + Zolodex or CAF + tamoxifen) in premenopausal women with axillary node positive, receptor positive breast cancer, CALGB 9192

NAVY 1975-1994 (CONTINUED)

Naval Hospital/Medical Center, San Diego, CA (continued)

Start Date	Number	Title
1991	NMCSD-197	Bone structure analysis: Tibial bone mineral density (BMD) as predicitive factor for tibial stress fractures in Navy SEAL trainees
1991	NMCSD-196	Trial of adjuvant chemoradiation after gastric resection for adenocarcinoma, CALGB 9195
1991	NMCSD-194	Phase III study of CAF-leucovorin vs. CAF for visceral crisis breast, CALGB 9140
1991	NMCSD-192	Clinical trial to assess relative efficacy of 5-FU + leucovorin with or without interferon alpha-2a in patients with Dukes' B and C carcinoma of the rectum, NSABP C-05
1991	NMCSD-191	Phase III trial of vinblastine/cisplatin/radiation therapy with or without carboplatin (NSC 241240) for inoperable stage IIIa and stage IIIb non-small cell lung cancer, CALGB 9130
1991	NMCSD-193	Subcutaneously administered recombinant human interleukin-2 and interferon alpha-2a for advanced breast cancer, CALGB 9041
1991	NMCSD-189	Phase III comparison of adjuvant chemoendocrine therapy with CAF and concurrent or delayed tamoxifen to tamoxifen alone in postmenopausal women with involved axillary lymph nodes and positive receptors, CALGB 9194
1991	NMCSD-179	Hyperfractionation radiotherapy and chemotherapy in limited stage small cell lung carcinoma, CALGB 8837
1991	NMCSD-187	Phase III comparison of cyclophoshamide, doxorubican, and 5-FU CAF and chemotherapy (CAF + Zoladex + tamoxifen) in premenopausal women with axillary node positive, receptor positive breast cancer, CALGB 9193
1991	NMCSD-186	Intensive doxorubicin, surgery, CMF, and radiation therapy for stage III breast cancer - a study of efficacy with pharmacokinetic and antigenic monitoring, CALGB 8944
1991	NMCSD-185	Phase III intergroup trial: A prospective randomized comparison of combined modality therapy for squamous carcinoma of the esophagus: Chemotherapy plus surgery versus surgery alone for patients with local region disease
1991	NMCSD-184	Oral vs intravenous etoposide in combination with intravenous cisplatin in extensive small cell lung cancer: Phase III, CALGB 9033
1991	NMCSD-183	Efficacy of arthroscopic Bankart repair in acute first time anterior shoulder dislocation

NAVY 1975-1994 (CONTINUED)

Naval Hospital/Medical Center, San Diego, CA (continued)

Start Date	Number	Title
1991	NMCSD-182	Underlying metabolic bone disease in femoral neck stress fractures
1991	NMCSD-181	Up-front alternating 6-MP/MTX vs up-front alternating chemotherapy for active lymphocytic leukemia in children (ALinC 15), POG 9000/9005
1991	NMCSD-180	Dose intensification of methotrexate and 6-mercapopturine for acute lymphocytic leukemia in children (ALinC 15), POG 9000/9005
1991	NMCSD-190	Phase III trial of G-CSF vs. placebo during remission induction and consolidation chemotherapy for adult acute lymphoblastic leukemia
1992	NMCSD-204	Color Doppler ultrasound finding in transitional cell carcinoma of bladder and kidney
1992	NMCSD-207	Comparison of "best local-regional therapy" with or without chemotherapy for stage IIIa (N2) non-small cell lung cancer: A randomized phase III study, CALGB 9134
1992	NMCSD-202	High intensity, brief duration chemotherapy for diffuse small noncleaved cell lymphoma and L-3 subtype of ALL: A pilot study of a multidrug regimen, CALGB 9251
1992	NMCSD-209	Randomized treatment of Jones' fractures
1992	NMCSD-208	Impact of stellate ganglion blockade on diaphragmatic function
1992	NMCSD-206	Phase III protocol for evaluation of 5-FU vs. 5-FU + PALA or 5-FU + oral leucovorin or 5-FU + intravenous leucovorin or 5-FU + rIFN alpha-2a in patients with advanced colorectal cancer, CALGB 9092
1992	NMCSD-205	Phase II study of high-dose cyclophosphamide plus recombinant granulocyte-colony stimulating factor in the treatment of follicular, low grade non-Hodgkin's lymphoma, CALGB 9150
1992	NMCSD-203	Edatrexate (20-ethyl-deaza-aminopterin) for malignant mesothelioma, phase II, CALGB 9131
1992	NMCSD-201	Clinical trial to evaluate effect dose intensification and increased cumulative dose of postoperative adriamycin-cyclophosphamide (AC) therapy with G-CSF on the disease-free survival and survival of patients with primary breast cancer and..., NSABP B-25
1992	NMCSD-200	Cryovalve heart valve allografts

NAVY 1975-1994 (CONTINUED)

Naval Hospital/Medical Center, San Diego, CA (continued)

Start Date	Number	Title
1992	NMCSD-199	Randomized study comparing standard vs. moderately high megestrol acetate in advanced prostate cancer, CALGB 9181
1992	NMCSD-198	Phase III randomized study of all-trans retinoic acid vs. cytosine arabinoside and daunorubicin as induction therapy for patients with previously untreated acute pomyelocytic leukemia, CALGB 9191
1993	NMCSD-229	Comparison of central venous pressures in superior and inferior vena cavas in children
1993	NMCSD-231	Hematopoietic growth factor vs. prophylactic antibiotic support in advanced non-small cell lung cancer: A prospective double-blind randomized control trial: A phase III study, CALGB 9232
1993	NMCSD-223	Randomized trial of subtotal nodal irradiation vs. doxorubicin plus vinblastine and subtotal nodal irradiation for stage I-IIa Hodgkin's disease, phase III, CALGB 9391
1993	NMCSD-224	Evaluation of biliary tree during laparoscopic cholecystectomy: Ultrasonography vs. intraoperative cholangiography
1993	NMCSD-225	Angiographic antioxidant atherosclerosis trial
1993	NMCSD-226	Phase II study of cyclophosphamide, prednisone, infusional doxorubicin, vincristine, and etoposide (I-CHOPE) in diffuse lymphomas relapsed/refactory to bolus therapy, CALGB 9255
1993	NMCSD-228	Phase II trial of lineage-specific consolidation therapy for adult acute lymphoblastic leukemia (ALL): Anti-B4-blocked ricin (NSC 639185) for B-lineage ALL and high dose cytarabine for non-B-lineage ALL, CALGB 9311
1993	NMCSD-230	Hip arthrodesis: Allergic fungal sinusitis, immunotherapy
1993	NMCSD-222	Treatment of advanced Hodgkin's disease: Randomized phase III trial comparing ABVD vs. MOPP/ABV hybrid, CALGB 8952
1993	NMCSD-217	Phase I study of topotecan and Taxol, CALGB 9362
1993	NMCSD-227	Etoposide, cisplatin, and radiation therapy with or without tamoxifen in limited stage small cell lung cancer: A randomized phase III study, CALGB 9235
1993	NMCSD-210	Recombinant urokinase (r-UK, Abbott-76120) versus operative intervention as initial therapy for acute lower-limb arterial occlusion

NAVY 1975-1994 (CONTINUED)

Naval Hospital/Medical Center, San Diego, CA (continued)

Start Date	Number	Title
1993	NMCSD-220	Dose intensive multi-modality therapy in limited small cell lung cancer, phase II study-limited access, CALGB 9236
1993	NMCSD-218	Phase III study of radiation therapy, levamisole and 5-fluorouracil vs. 5-fluorouracil and levamisole in selected patients with completely resected colon cancer, CALGB 9294
1993	NMCSD-215	Hip arthrodesis: New technique
1993	NMCSD-214	Phase II trial of induction chemotherapy followed by radiation therapy plus concurrent chemotherapy for poor prognosis, locally advanced, previously untreated carcinomas of the anal canal, CALGB 9281
1993	NMCSD-213	Phase II trial of 2-chlorodeoxyadenosine (2-CDA) in B-cell chronic lymphocytic leukemia patients who have previously failed therapy with fludarabine phosphate, CALGB 9211
1993	NMCSD-211	Treatment of AIDS associated non-Hodgkin's lymphoma with cyclophosphamide/ doxorubicin/vincristine/prednisone/etoposide (CHOPE), zidovudine, granulocyte-colony stimulating factor (G-CSF),and erythropoietin (rhEPO), CALGB 9155
1993	NMCSD-221	Feasibility study of adjuvant chemotherapy with dose-intensification cyclophosphamide/doxorubicin (CA) + G-CSF in patients with operable breast cancer and histologically involved axillary lymph nodes, CALGB 9141
1993	NMCSD-219	Topotecan for advanced breast cancer, phase II study, CALGB 9242
1993	NMCSD-216	Phase II study of Taxotere (NSC 628503) in previously treated non-Hodgkin's lymphoma: IWF grades A-H, CALGB 9256
1993	NMCSD-212	Phase II trial of 2-chlorodeoxyadenosine in advanced-stage, previously untreated low-grade lymphomas, CALGB 9153
Unknown	NMCSD-275	Echographic and radionuclide detection of hepatoma
Unknown	NMCSD-290	Groshong catheter: Initial experience and early results of imaging-guided placement
Unknown	NMCSD-289	Renal devitalization using 95 percent ethyl alcohol

NAVY 1975-1994 (CONTINUED)

Naval Medical Clinic, Annapolis, MD

Start Date	Number	Title
1975	NMCLANNAP-02	Radiological evaluation of cervical spine of collegiate football players
1975	NMCLANNAP-10	Functional instability of ankle joint
1976	NMCLANNAP-11	Clinical study of intraocular lens implantation after cataract extractions, primary or secondary
Unknown	NMCLANNAP-04	Study to establish normal range of ankle mobility (talar tilt) during inversion stress

Naval Medical Research Institute, Bethesda, MD

Start Date	Number	Title
1978	NMRI-04	Tracer gas kinetic studies for decompression table design
1986	NMRI-03	Nitrogen gas exchange in the human knee

Naval Medical Research Institute, McMurdo Sound, Antartica

Start Date	Number	Title
1983	NMRI-02	Decreased free fraction of thyroid hormones after prolonged Antartic residence

Naval Medical Research Institute, Port Hueneme, CA

Start Date	Number	Title
1983	NMRI-02	Decreased free fraction of thyroid hormones after prolonged Antartic residence

Naval Medical Research Unit 3, Cairo, Egypt

Start Date	Number	Title
1978	NMRU3-09	Efficacy of medical treatment of schistosomol obstructive uropathy as determined by I-131 hippuran renography
1978	NMRU3-01	Calcification of *Schistosoma haematobium* eggs: Relation of radiologically demonstrable calcification to eggs in tissues and passage of eggs in urine

NAVY 1975-1994 (CONTINUED)

Naval Medical Research Unit 3, Cairo, Egypt (continued)

Start Date	Number	Title
1986	NMRU3-26	Schistosomal colonic polyposis: Clinical, radiological, and parasitological study
1986	NMRU3-05	Schistosomal colonic polyposis: Clinical, radiological, and parasitological study

Naval Regional Medical Center Portsmouth, VA

Start Date	Number	Title
1984	NHPTS-36	Treatment of previously untreated acute lymphoblastic leukemia for pediatric patients with unfavorable prognostic features, CCSG-193

Naval Regional Medical Center, Oakland, CA

Start Date	Number	Title
1977	NHOAK-008	Hepatic abnormalities of diabetes mellitus. Abnormalities of radionuclide scan in relation to diabetic control
1978	NHOAK-009	Xenon-127 gas for inhalation
1981	NHOAK-016	Phase I-II study of combination chemotherapy and sequential hemibody radiation therapy in the treatment of high tumor burden multiple myeloma, NCOG 9M91
1981	NHOAK-023	Use of quantiative computed tomography (QCT) in assessing bone mass changes in diabetic patients
1981	NHOAK-012	All sites, phase I & II protocol of heavy charged particle for locally advanced and or recurrent cancers of mulitple sites and types, NCOG OR81
1981	NHOAK-010	Indium oxide indium-111 labeled cellular blood components
1981	NHOAK-011	Technetium-99m sulfur colloid of oral use
1982	NHOAK-036	Clinical trial to assess sequential methotrexate + 5-fluorouracil + leucovorin in patients with primary breast cancer and negative axillary nodes whose tumors are negative for estrogen receptors, NSABP B-13
1982	NHOAK-032	Clinical trial to evaluate postoperative immunotherapy and postoperative systemic chemotherapy in the management of resectable colon cancer, NSAP C-01

NAVY 1975-1994 (CONTINUED)

Naval Regional Medical Center, Oakland, CA (continued)

Start Date	Number	Title
1982	NHOAK-035	Clinical trial to compare PFT with and without Adriamycin in the management of patients with primary breast cancer and positive axillary nodes whose tumors are positive for estrogen receptors, NSABP B-12
1982	NHOAK-034	Clinical trial to assess tamoxifen in patients with primary breast cancer and negative axillary nodes whose tumors are positive for estrogen receptors, NSABP B-14
1982	NHOAK-033	Clinical trial to compare PFT with and without Adriamycin in the management of patients with primary breast cancer and positive axillary nodes whose tumors are negative for estrogen receptors, NSABP B-11
1982	NHOAK-018	Treatment of adult lymphoblastic lymphoma, phase II study using intrathecal methotrexate with whole brain radiotherapy combined with systemic methotrexate, NCOG 13L-80-1
1982	NHOAK-015	Phase III study of radiotherapy plus hydroxyurea and BCNU vs. radiotherapy plus hydroxyurea and procarbazine, BCNU, vincristine (PCV) for the treatment of primary malignant brain tumors, NCOG 6G61
1983	NHOAK-022	Early determination of femoral head vascularity using technetium 99m sulfur colloid and quantitative technique
1984	NHOAK-020	Phase III trial of seven-drug versus three-drug chemotherapy regimens with or without cranial irradiation (PCI) for undifferentiated small cell anaplastic lung cancer, NCOG 20-83-1
1985	NHOAK-037	Three-arm clinical trial comparing tamoxifen alone with L-PAM, 5-FU, and tamoxifen or short intensive Adriamycin-cyclophosphamide and tamoxifen in positive node patients, NSABP B-16
1987	NHOAK-024	99m Tc-HMPAO labeled leukocytes and platelets: Basic and clinical studies
1989	NHOAK-028	Radionuclide imaging of chronic anterior cruciate ligament deficient knees
1989	NHOAK-025	Comparison of thallium scintigraphic images after transesophageal atrial pacing (TAP) and dipyridamole for detection of atherosclerotic coronary artery disease
1989	NHOAK-038	Unified trial to compare short intensive preoperative systemic Adriamycin-cyclophosphamide therapy with similar therapy administered in conventional postoperative fashion, NSABP B-18
1989	NHOAK-039	Clinical trial to determine the worth of chemotherapy and tamoxifen over tamoxifen alone in the management of patients with primary invasive breast cancer, negative axillary nodes, and estrogen receptor positive tumors, NSABP B-20

NAVY 1975-1994 (CONTINUED)

Naval Regional Medical Center, Oakland, CA (continued)

Start Date	Number	Title
1990	NHOAK-040	Clinical trial to assess the relative efficacy of 5-FU + leucovorin, 5-FU + levamisole, and 5-FU, leucovorin + levamisole inpatients with Dukes' B and C carcinoma of the colon, NSABP C-04
1991	NHOAK-019	Phase II study of pelvic and abdominal radiotherapy vs. cisplatin, Adriamycin, and cyclophosphamide, NCOG 50-82-1
1991	NHOAK-029	Prospective comparison of air-contrast barium enema plus procto-sigmoidoscopy with colonoscopy in screening of asymptomatic persons with a history of colorectal cancer in first degree relatives
1991	NHOAK-030	Phase II trial of vinblastine/cisplatin/radiation therapy with or without carboplatin for inoperable stage IIIa and stage IIb non-small cell lung cancer, CALGB 9130
1991	NHOAK-042	Clinical trial comparing short, intensive AC + tamoxifen with conventional CMF + tamoxifen in node-negative breast cancer patients with ER-negative tumors, NSABP B-23
1991	NHOAK-041	Oral versus intravenous etoposide in combination with intravenous cisplatin in extensive small cell lung cancer, phase II, CALGB 9033
1992	NHOAK-027	Radiographic correlation of leg length inequality in patients with total hip arthroplasty (THA)
1993	NHOAK-031	Acromion morphology in the active duty population: Plain roentgenogram analysis
Unknown	NHOAK-014	Randomized phase III study of radiation therapy with or without chemotherapy for remission induced and multidrug chemotherapy program for remission consolidation and maintenance in inoperable squamous cell carcinoma, NCOG 7H61
Unknown	NHOAK-026	Evaluation of subcutaneous gallium citrate injection for malignant abdominal adenopathy

Naval Regional Medical Center, Orlando, FL

Start Date	Number	Title
1976	NMCLANNAP-11	Clinical study of intraocular lens implantation after cataract extractions, primary or secondary
1976	NHORL-001	Acute respiratory disease in recruits at Naval Training Center, Orlando, Florida

NAVY 1975-1994 (CONTINUED)

Naval Regional Medical Center, Yokosuka, Japan

Start Date	Number	Title
1976	NMCSD-001	Clinical evaluation of Ga-76 scanning in diagnosis of anaplastic carcinoma and malignant lymphoma in thyroid gland

Scripps Clinic, San Diego, CA

Start Date	Number	Title
1988	NMCSD-162	Studies of thrombocytopoiesis in patients with myeloproliferative disorders

Submarine Medical Research Laboratory, New London, CT

Start Date	Number	Title
Unknown	SMRL-03	Aseptic bone necrosis among US Navy divers: Survey of 934 nonrandomly selected personnel

University of California School of Medicine, La Jolla, CA

Start Date	Number	Title
1975	NMCSD-267	Thyroid uptake of I-131: Further comparisons of capsules and liquid preparations
1988	NMCSD-277	Protective effects of corticosteriods in contrast material anaphylaxis

University of California, Los Angeles, CA

Start Date	Number	Title
1986	NHRC-01	Blood markers of connective tissue response to exercise intensity change

University of California, San Diego, CA

Start Date	Number	Title
1975	NMCSD-266	Lymphangiographic accuracy in the staging of testicular tumors
1981	NMCSD-060	Serial angiographic assessment of effect of risk factor modification in young active duty Navy men

NAVY 1975-1994 (CONTINUED)

University of California, San Diego, CA (continued)

Start Date	Number	Title
1987	NMCSD-237	Etoposide, vinblastine, doxorubican (EVA) as the primary treatment of advanced Hodgkin's disease in relpase from MOPP or MOPP variants, phase II, CALGB 8751
1989	NMCSD-164	Abrogation of drug resistance to cisplatin and 5-fluorouracil in patients with metastatic colorectal cancer through the use of diltiazem

University of Southern California Medical Center, Los Angeles, CA

Start Date	Number	Title
1977	NMCSD-248	Persistent carcinoma of the oropharynx and oral cavity retreated by afterloading interstitial 192 Ir implant
1978	NMCSD-247	Iridium-192 afterload implant in the retreatment of head and neck cancers

Virginia Mason Research Center, Seattle, WA

Start Date	Number	Title
Unknown	NMRDC-01	Investigation of hematologic and pathologic response to decompression

Walter Reed Army Hospital/Medical Center, Washington, DC

Start Date	Number	Title
1991	NNMC-063	Combined therapy and restaging in the treatment of stages I and IIa Hodgkin's disease in pediatric patients—a pediatric oncology group phase III study

APPENDIX 2

INFORMATION SOURCES

1. SELECTED BIBLIOGRAPHY

A. Regulations

(1) Department of Defense (DoD)
  (a) Common Rule (32 CFR Part 219) (see exhibit 1).
  (b) DoD Directive 3216.2, Protection of Human Subjects in DoD Supported Research, DoD Policy Memorandum, 10 June 1993.

(2) Army
  (a) AR 40-7, Clinical Use of Investigational Drugs, 13 November 1964.
  (b) AR 40-38, Clinical Investigation Program, 23 February 1973.
  (c) AR 70-25, Use of Volunteers as Subjects of Research, 31 July 1974.

(3) Navy
  (a) Secretary of the Navy Instruction 3900.39B, Protection of Human Subjects, 27 February 1984.

(4) Air Force
  (a) AF Instruction 40-402, Using Human Subjects in Research, Development, Test, and Evaluation, 19 July 1994.
  (b) AF Instruction 40-403, Clinical Investigations in Medical Research, Guidance and Procedures, May 1994.
  (c) AF Policy Directive 40-4, Clinical Investigations and Human Use in Medical Research, 11 May 1994.

B. Executive Orders/Memoranda

(1) Executive Order 12891, Subject: Advisory Committee on Human Radiation Experiments, dated 15 January 1994 (see exhibit 2).

(2) Memorandum, from Secretary to the Cabinet, Subject: Retrieval and Inventory of Records of Human Radiation Experiments, dated 19 January 1994 (see exhibit 3).

(3) Memorandum from President Clinton, Subject: Review of Federal Policy for the Protection of Human Subjects, dated 17 February 1994 (see exhibit 4).

(4) Executive Order 12958, Subject: Classified National Security Information, dated 17 April 1995 (see exhibit 5).

(5) Executive Order 12975, Subject: Protection of Human Research Subjects and Creation of National Bioethics Advisory Commission, dated 3 October 1995 (see exhibit 6).

C. Congressional Reports

(1) U.S. House of Representatives, Committee on Energy and Commerce, Subcommittee on Energy Conservation and Power, November 1986, "American Nuclear Guinea Pigs: Three Decades of Radiation Experiments on U.S. Citizens."

(2) U.S. Senate, Committee on Governmental Affairs, 11 November 1993, "Nuclear Health and Safety: Examples of Post World War II Radiation Releases at U.S. Nuclear Sites," GAO/RCED-94-51-FS.

D. Advisory Committee on Human Radiation Experiments

Final Report (Washington, D.C.: U.S. Government Printing Office, October 1995).

E. DoD Memorandums

(1) Memorandum from Secretary of Defense, Subject: DoD Human Radiation Review, dated 7 January 1994 (see exhibit 7).

(2) Memorandum from Assistant to the Secretary of Defense (Atomic Energy), Subject: Locating Records of DoD Human Radiation Experiments, dated 31 January 1994 (see exhibit 8).

(3) Memorandum from Assistant to the Secretary of Defense (Atomic Energy), Subject: Expansion of Human Radiation Research Review to Include Policy Making Activities of DoD Components, dated 14 June 1994 (see exhibit 9).

(4) Memorandum from Secretary of Defense, Subject: Response by the DoD to the Findings and Recommendations of the Advisory Committee on Human Radiation Experiments, dated 30 October 1995 (see exhibit 10).

(5) Memorandum from Assistant to the Secretary of Defense (Atomic Energy), Subject: Response by the DoD to the Findings and Recommendations of the Advisory Committee on Human Radiation Experiments (ACHRE), dated 2 November 1995 (see exhibit 11).

F. U.S. Department of Energy (DOE)

(1) United States Nuclear Tests, DOE/NV-209 (Rev. 14) (Springfield, VA: National Technical Information Service, U.S. Department of Commerce, 1994).

(2) Human Radiation Experiments: The Department of Energy Roadmap to the Story and the Records (Springfield, VA: National Technical Information Service, U.S. Department of Commerce, February 1995).

(3) Human Radiation Experiments Associated with the Department of Energy and Its Predecessors (Springfield, VA: National Technical Information Service, U.S. Department of Commerce, July 1995).

2. Sources for Additional Information

A. DoD

(1) DoD Office of Public Affairs:

HRE records are also available to the public by submitting a request to the DoD Public Affairs Office. Before submitting a request, it is important first to determine if the information is available to the public in reading rooms provided by NARA and DOE or if the information can be retrieved from the CIC or by HREX on the Internet World Wide Web (see following). Requests may be submitted to:

Department of Defense
Office of Public Affairs
ATTN: Radiation Experiments
Command Center
1400 Defense Pentagon
Washington, DC 20301-1400

(2) Military Services.

Points of contact for human radiation projects:

Army:
Assistant Secretary of the Army
(Manpower and Reserve Affairs)
ATTN: Assistant for Health Policy
Room 2E591
111 Army Pentagon
Washington, DC 20310
(703) 697-2044

Navy (includes Marine Corps):
Chief, Bureau of Medicine and Surgery
300 E Street, NW
Washington, DC 20372
(202) 653-1182

Air Force:
HQ, Air Force Medical Operations Agency
ATTN: AFMOA/SGOT
110 Luke Avenue, Room 400
Bolling Air Force Base
Washington, DC 20332-7050
(202) 767-5078

(3) Nuclear Test Personnel Review (NTPR) Program. The NTPR program is responsible for identifying DoD personnel who participated in U.S. atmospheric nuclear tests and for determining their radiation doses. This program provides participants with confirmation of their participation, their associated radiation dose, and the availability of health care and compensation programs. The NTPR program can be contacted at the Defense Special Weapons Agency, Attn: ESN/ NTPR, 6801 Telegraph Road, Alexandria, Virginia 22310-3398, or call 1-800-462-3683.

B. National Archives and Records Administration (NARA)

Documents that ACHRE cited in its *Final Report* are available from NARA. Submit written requests for records to:

NARA at College Park, Reference Branch
8601 Adelphi Road
College Park, MD 20740
(301) 713-7250

A public reading room is open on Mondays and Wednesdays from 8:45 a.m. to 5:00 p.m., and on Tuesdays, Thursdays, Fridays, and Saturdays from 8:45 a.m. to 9:00 p.m. After obtaining an identification card, requesters can use the finding aids to request documents. Documents are pulled at 9:30 a.m., 10:30 a.m., 11:30 a.m., 1:30 p.m., and 3:30 p.m. If the documents have been requested ahead of time, they can be reviewed any time the reading room is open. The copy fee at the reading room is $0.10 per page.

C. Coordination and Information Center (CIC)

The CIC is a DOE facility that contains:

- Historical documents, records and data dealing with off-site radioactive fallout from U.S. testing of nuclear devices and human radiation experimentation
- Policy documents dealing with conduct of tests and public safety
- Documents dealing with the development and state-of-knowledge of the health effects of radiation
- Documents dealing with public information as disseminated through the media
- Studies and reports produced by the scientific and technical field.

The CIC is open to visitors Monday through Friday from 7:30 a.m. to 4:40 p.m. and provides library services, including a staff that will make copies or do proxy research according to a fee schedule that is available on request. The location is:

CIC
2621 Losee Road
Building B-3
North Las Vegas, NV 89030
(702) 295-0731
FAX: (702) 295-0877
E-mail: cic@egg.nv.doe.gov

Written requests for services can be made to:

Bechtel
P.O. Box 98521
Las Vegas, NV 89193-8521

D. Internet Access

(1) HREX (Human Radiation Experiments) is a World Wide Web resource for documents and information on human radiation experiments. Copies of documents (approximately 10,000 records) that the DoD has collected are currently being processed for this system. The web site address for HREX is

http:\\www.ohre.doe.gov.

(2) OPENNET. OpenNet is an Internet source for recently declassified Government documents (approximately 10,000 records). The DoD has declassified many documents identified in the search for human radiation experiments, and these are planned for transfer to OpenNet. The World Wide Web address for this system is

http://www.doe.gov/html/otsi/opennet/opennet1.html.

The DoD collection is scheduled to be available in 1997.

E. Other Sources

Department of Energy
Office of Human Radiation Experiments
(202) 586-5195

Department of Veterans Affairs
National Service Number
1-800-827-1000

EXHIBIT 1 DoD IMPLEMENTATION OF THE "COMMON RULE"

code of federal regulations

National Defense

PART 219—PROTECTION OF HUMAN SUBJECTS

Sec.
219.101 To what does this policy apply?
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219.119 Research undertaken without the intention of involving human subjects.
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219.124 Conditions.

EXHIBIT 1 DoD IMPLEMENTATION OF THE "COMMON RULE" (CONTINUED)

AUTHORITY: 5 U.S.C. 301; 42 U.S.C. 300v–1(b).

SOURCE: 56 FR 28012, 28021, June 18, 1991, unless otherwise noted.

§219.101 To what does this policy apply?

(a) Except as provided in paragraph (b) of this section, this policy applies to all research involving human subjects conducted, supported or otherwise subject to regulation by any federal department or agency which takes appropriate administrative action to make the policy applicable to such research. This includes research conducted by federal civilian employees or military personnel, except that each department or agency head may adopt such procedural modifications as may be appropriate from an administrative standpoint. It also includes research conducted, supported, or otherwise subject to regulation by the federal government outside the United States.

(1) Research that is conducted or supported by a federal department or agency, whether or not it is regulated as defined in §219.102(e), must comply with all sections of this policy.

(2) Research that is neither conducted nor supported by a federal department or agency but is subject to regulation as defined in §219.102(e) must be reviewed and approved, in compliance with §219.101, §219.102, and §219.107 through §219.117 of this policy, by an institutional review board (IRB) that operates in accordance with the pertinent requirements of this policy.

(b) Unless otherwise required by department or agency heads, research activities in which the only involvement of human subjects will be in one or more of the following categories are exempt from this policy:

(1) Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as (i) research on regular and special education instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.

(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:

(i) Information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and

(ii) Any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

(3) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior that is not exempt under paragraph (b)(2) of this section, if:

(i) The human subjects are elected or appointed public officials or candidates for public office; or

(ii) Federal statute(s) require(s) without exception that the confidentiality of the personally identifiable information will be maintained throughout the research and thereafter.

(4) Research, involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.

(5) Research and demonstration projects which are conducted by or subject to the approval of department or agency heads, and which are designed to study, evaluate, or otherwise examine:

(i) Public benefit or service programs;

(ii) Procedures for obtaining benefits or services under those programs;

(iii) Possible changes in or alternatives to those programs or procedures; or

(iv) Possible changes in methods or levels of payment for benefits or services under those programs.

(6) Taste and food quality evaluation and consumer acceptance studies,

(i) If wholesome foods without additives are consumed or

(ii) If a food is consumed that contains a food ingredient at or below the level and for a use found to be safe, or agricultural chemical or environmental contaminant at or below the

EXHIBIT 1 DoD IMPLEMENTATION OF THE "COMMON RULE" (CONTINUED)

level found to be safe, by the Food and Drug Administration or approved by the Environmental Protection Agency or the Food Safety and Inspection Service of the U.S. Department of Agriculture.

(c) Department or agency heads retain final judgment as to whether a particular activity is covered by this policy.

(d) Department or agency heads may require that specific research activities or classes of research activities conducted, supported, or otherwise subject to regulation by the department or agency but not otherwise covered by this policy, comply with some or all of the requirements of this policy.

(e) Compliance with this policy requires compliance with pertinent federal laws or regulations which provide additional protections for human subjects.

(f) This policy does not affect any state or local laws or regulations which may otherwise be applicable and which provide additional protections for human subjects.

(g) This policy does not affect any foreign laws or regulations which may otherwise be applicable and which provide additional protections to human subjects of research.

(h) When research covered by this policy takes place in foreign countries, procedures normally followed in the foreign countries to protect human subjects may differ from those set forth in this policy. (An example is a foreign institution which complies with guidelines consistent with the World Medical Assembly Declaration (Declaration of Helsinki amended 1989) issued either by sovereign states or by an organization whose function for the protection of human research subjects is internationally recognized.) In these circumstances, if a department or agency head determines that the procedures prescribed by the institution afford protections that are at least equivalent to those provided in this policy, the department or agency head may approve the substitution of the foreign procedures in lieu of the procedural requirements provided in this policy. Except when otherwise required by statute, Executive Order, or the department or agency head, notices of these actions as they occur will be published in the FEDERAL REGISTER or will be otherwise published as provided in department or agency procedures.

(i) Unless otherwise required by law, department or agency heads may waive the applicability of some or all of the provisions of this policy to specific research activities or classes of research activities otherwise covered by this policy. Except when otherwise required by statute or Executive Order, the department or agency head shall forward advance notices of these actions to the Office for Protection from Research Risks, Department of Health and Human Services (HHS), and shall also publish them in the FEDERAL REGISTER or in such other manner as provided in department or agency procedures.[1]

[56 FR 28012, 28021, June 18, 1991, as amended at 56 FR 29756, June 28, 1991]

§219.102 Definitions.

(a) *Department or agency head* means the head of any federal department or agency and any other officer or employee of any department or agency to whom authority has been delegated.

(b) *Institution* means any public or private entity or agency (including federal, state, and other agencies).

(c) *Legally authorized representative* means an individual or judicial or other body authorized under applicable law to consent on behalf of a prospective subject to the subject's participation in the procedure(s) involved in the research.

[1] Institutions with HHS-approved assurances on file will abide by provisions of title 45 CFR part 46 subparts A–D. Some of the other Departments and Agencies have incorporated all provisions of title 45 CFR part 46 into their policies and procedures as well. However, the exemptions at 45 CFR 46.101(b) do not apply to research involving prisoners, fetuses, pregnant women, or human in vitro fertilization, subparts B and C. The exemption at 45 CFR 46.101(b)(2), for research involving survey or interview procedures or observation of public behavior, does not apply to research with children, subpart D, except for research involving observations of public behavior when the investigator(s) do not participate in the activities being observed.

EXHIBIT 1 DoD IMPLEMENTATION OF THE "COMMON RULE" (CONTINUED)

(d) *Research* means a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge. Activities which meet this definition constitute research for purposes of this policy, whether or not they are conducted or supported under a program which is considered research for other purposes. For example, some demonstration and service programs may include research activities.

(e) *Research subject to regulation*, and similar terms are intended to encompass those research activities for which a federal department or agency has specific responsibility for regulating as a research activity, (for example, Investigational New Drug requirements administered by the Food and Drug Administration). It does not include research activities which are incidentally regulated by a federal department or agency solely as part of the department's or agency's broader responsibility to regulate certain types of activities whether research or non-research in nature (for example, Wage and Hour requirements administered by the Department of Labor).

(f) *Human subject* means a living individual about whom an investigator (whether professional or student) conducting research obtains

(1) Data through intervention or interaction with the individual, or

(2) Identifiable private information.

Intervention includes both physical procedures by which data are gathered (for example, venipuncture) and manipulations of the subject or the subject's environment that are performed for research purposes. Interaction includes communication or interpersonal contact between investigator and subject. "Private information" includes information about behavior that occurs in a context in which an individual can reasonably expect that no observation or recording is taking place, and information which has been provided for specific purposes by an individual and which the individual can reasonably expect will not be made public (for example, a medical record). Private information must be individually identifiable (i.e., the identity of the subject is or may readily be ascertained by the investigator or associated with the information) in order for obtaining the information to constitute research involving human subjects.

(g) *IRB* means an institutional review board established in accord with and for the purposes expressed in this policy.

(h) *IRB approval* means the determination of the IRB that the research has been reviewed and may be conducted at an institution within the constraints set forth by the IRB and by other institutional and federal requirements.

(i) *Minimal risk* means that the probability and magnitude of harm or discomfort anticipated in the research are not greater in and of themselves than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests.

(j) *Certification* means the official notification by the institution to the supporting department or agency, in accordance with the requirements of this policy, that a research project or activity involving human subjects has been reviewed and approved by an IRB in accordance with an approved assurance.

§219.103 Assuring compliance with this policy—research conducted or supported by any Federal Department or Agency.

(a) Each institution engaged in research which is covered by this policy and which is conducted or supported by a federal department or agency shall provide written assurance satisfactory to the department or agency head that it will comply with the requirements set forth in this policy. In lieu of requiring submission of an assurance, individual department or agency heads shall accept the existence of a current assurance, appropriate for the research in question, on file with the Office for Protection from Research Risks, HHS, and approved for federalwide use by that office. When the existence of an HHS-approved assurance is accepted in lieu of requiring submission of an assurance, reports (except certification) required by this policy to be made to department and agency heads shall also be made to the Office for Protection from Research Risks, HHS.

EXHIBIT 1 DoD IMPLEMENTATION OF THE "COMMON RULE" (CONTINUED)

(b) Departments and agencies will conduct or support research covered by this policy only if the institution has an assurance approved as provided in this section, and only if the institution has certified to the department or agency head that the research has been reviewed and approved by an IRB provided for in the assurance, and will be subject to continuing review by the IRB. Assurances applicable to federally supported or conducted research shall at a minimum include:

(1) A statement of principles governing the institution in the discharge of its responsibilities for protecting the rights and welfare of human subjects of research conducted at or sponsored by the institution, regardless of whether the research is subject to federal regulation. This may include an appropriate existing code, declaration, or statement of ethical principles, or a statement formulated by the institution itself. This requirement does not preempt provisions of this policy applicable to department- or agency-supported or regulated research and need not be applicable to any research exempted or waived under §219.101 (b) or (i).

(2) Designation of one or more IRBs established in accordance with the requirements of this policy, and for which provisions are made for meeting space and sufficient staff to support the IRB's review and recordkeeping duties.

(3) A list of IRB members identified by name; earned degrees; representative capacity; indications of experience such as board certifications, licenses, etc., sufficient to describe each member's chief anticipated contributions to IRB deliberations; and any employment or other relationship between each member and the institution; for example: full-time employee, part-time employee, member of governing panel or board, stockholder, paid or unpaid consultant. Changes in IRB membership shall be reported to the department or agency head, unless in accord with §219.103(a) of this policy, the existence of an HHS-approved assurance is accepted. In this case, change in IRB membership shall be reported to the Office for Protection from Research Risks, HHS.

(4) Written procedures which the IRB will follow (i) for conducting its initial and continuing review of research and for reporting its findings and actions to the investigator and the institution; (ii) for determining which projects require review more often than annually and which projects need verification from sources other than the investigators that no material changes have occurred since previous IRB review; and (iii) for ensuring prompt reporting to the IRB of proposed changes in a research activity, and for ensuring that such changes in approved research, during the period for which IRB approval has already been given, may not be initiated without IRB review and approval except when necessary to eliminate apparent immediate hazards to the subject.

(5) Written procedures for ensuring prompt reporting to the IRB, appropriate institutional officials, and the department or agency head of (i) any unanticipated problems involving risks to subjects or others or any serious or continuing noncompliance with this policy or the requirements or determinations of the IRB and (ii) any suspension or termination of IRB approval.

(c) The assurance shall be executed by an individual authorized to act for the institution and to assume on behalf of the institution the obligations imposed by this policy and shall be filed in such form and manner as the department or agency head prescribes.

(d) The department or agency head will evaluate all assurances submitted in accordance with this policy through such officers and employees of the department or agency and such experts or consultants engaged for this purpose as the department or agency head determines to be appropriate. The department or agency head's evaluation will take into consideration the adequacy of the proposed IRB in light of the anticipated scope of the institution's research activities and the types of subject populations likely to be involved, the appropriateness of the proposed initial and continuing review procedures in light of the probable risks, and the size and complexity of the institution.

(e) On the basis of this evaluation, the department or agency head may

EXHIBIT 1 DoD IMPLEMENTATION OF THE "COMMON RULE" (CONTINUED)

approve or disapprove the assurance, or enter into negotiations to develop an approvable one. The department or agency head may limit the period during which any particular approved assurance or class of approved assurances shall remain effective or otherwise condition or restrict approval.

(f) Certification is required when the research is supported by a federal department or agency and not otherwise exempted or waived under §219.101 (b) or (i). An institution with an approved assurance shall certify that each application or proposal for research covered by the assurance and by §219.103 of this Policy has been reviewed and approved by the IRB. Such certification must be submitted with the application or proposal or by such later date as may be prescribed by the department or agency to which the application or proposal is submitted. Under no condition shall research covered by §219.103 of the Policy be supported prior to receipt of the certification that the research has been reviewed and approved by the IRB. Institutions without an approved assurance covering the research shall certify within 30 days after receipt of a request for such a certification from the department or agency, that the application or proposal has been approved by the IRB. If the certification is not submitted within these time limits, the application or proposal may be returned to the institution.

(Approved by the Office of Management and Budget under control number 9999-0020)

[56 FR 28012, 28021, June 18, 1991, as amended at 56 FR 29756, June 28, 1991]

§§219.104—219.106 [Reserved]

§219.107 IRB membership.

(a) Each IRB shall have at least five members, with varying backgrounds to promote complete and adequate review of research activities commonly conducted by the institution. The IRB shall be sufficiently qualified through the experience and expertise of its members, and the diversity of the members, including consideration of race, gender, and cultural backgrounds and sensitivity to such issues as community attitudes, to promote respect for its advice and counsel in safeguarding the rights and welfare of human subjects. In addition to possessing the professional competence necessary to review specific research activities, the IRB shall be able to ascertain the acceptability of proposed research in terms of institutional commitments and regulations, applicable law, and standards of professional conduct and practice. The IRB shall therefore include persons knowledgeable in these areas. If an IRB regularly reviews research that involves a vulnerable category of subjects, such as children, prisoners, pregnant women, or handicapped or mentally disabled persons, consideration shall be given to the inclusion of one or more individuals who are knowledgeable about and experienced in working with these subjects.

(b) Every nondiscriminatory effort will be made to ensure that no IRB consists entirely of men or entirely of women, including the institution's consideration of qualified persons of both sexes, so long as no selection is made to the IRB on the basis of gender. No IRB may consist entirely of members of one profession.

(c) Each IRB shall include at least one member whose primary concerns are in scientific areas and at least one member whose primary concerns are in nonscientific areas.

(d) Each IRB shall include at least one member who is not otherwise affiliated with the institution and who is not part of the immediate family of a person who is affiliated with the institution.

(e) No IRB may have a member participate in the IRB's initial or continuing review of any project in which the member has a conflicting interest, except to provide information requested by the IRB.

(f) An IRB may, in its discretion, invite individuals with competence in special areas to assist in the review of issues which require expertise beyond or in addition to that available on the IRB. These individuals may not vote with the IRB.

§219.108 IRB functions and operations.

In order to fulfill the requirements of this policy each IRB shall:

(a) Follow written procedures in the same detail as described in

EXHIBIT 1 DoD IMPLEMENTATION OF THE "COMMON RULE" (CONTINUED)

§219.103(b)(4) and, to the extent required by, §219.103(b)(5).

(b) Except when an expedited review procedure is used (see §219.110), review proposed research at convened meetings at which a majority of the members of the IRB are present, including at least one member whose primary concerns are in nonscientific areas. In order for the research to be approved, it shall receive the approval of a majority of those members present at the meeting.

§219.109 IRB Review of Research.

(a) An IRB shall review and have authority to approve, require modifications in (to secure approval), or disapprove all research activities covered by this policy.

(b) An IRB shall require that information given to subjects as part of informed consent is in accordance with §219.116. The IRB may require that information, in addition to that specifically mentioned in §219.116, be given to the subjects when in the IRB's judgment the information would meaningfully add to the protection of the rights and welfare of subjects.

(c) An IRB shall require documentation of informed consent or may waive documentation in accordance with §219.117.

(d) An IRB shall notify investigators and the institution in writing of its decision to approve or disapprove the proposed research activity, or of modifications required to secure IRB approval of the research activity. If the IRB decides to disapprove a research activity, it shall include in its written notification a statement of the reasons for its decision and give the investigator an opportunity to respond in person or in writing.

(e) An IRB shall conduct continuing review of research covered by this policy at intervals appropriate to the degree of risk, but not less than once per year, and shall have authority to observe or have a third party observe the consent process and the research.

(Approved by the Office of Management and Budget under control number 9999-0020)

§219.110 Expedited review procedures for certain kinds of research involving no more than minimal risk, and for minor changes in approved research.

(a) The Secretary, HHS, has established, and published as a Notice in the FEDERAL REGISTER, a list of categories of research that may be reviewed by the IRB through an expedited review procedure. The list will be amended, as appropriate after consultation with other departments and agencies, through periodic republication by the Secretary, HHS, in the FEDERAL REGISTER. A copy of the list is available from the Office for Protection from Research Risks, National Institutes of Health, HHS, Bethesda, Maryland 20892.

(b) An IRB may use the expedited review procedure to review either or both of the following:

(1) Some or all of the research appearing on the list and found by the reviewer(s) to involve no more than minimal risk,

(2) Minor changes in previously approved research during the period (of one year or less) for which approval is authorized.

Under an expedited review procedure, the review may be carried out by the IRB chairperson or by one or more experienced reviewers designated by the chairperson from among members of the IRB. In reviewing the research, the reviewers may exercise all of the authorities of the IRB except that the reviewers may not disapprove the research. A research activity may be disapproved only after review in accordance with the non-expedited procedure set forth in §219.108(b).

(c) Each IRB which uses an expedited review procedure shall adopt a method for keeping all members advised of research proposals which have been approved under the procedure.

(d) The department or agency head may restrict, suspend, terminate, or choose not to authorize an institution's or IRB's use of the expedited review procedure.

EXHIBIT 1 DoD IMPLEMENTATION OF THE "COMMON RULE" (CONTINUED)

§ 219.111 Criteria for IRB approval of research.

(a) In order to approve research covered by this policy the IRB shall determine that all of the following requirements are satisfied:

(1) Risks to subjects are minimized:

(i) By using procedures which are consistent with sound research design and which do not unnecessarily expose subjects to risk, and

(ii) Whenever appropriate, by using procedures already being performed on the subjects for diagnostic or treatment purposes.

(2) Risks to subjects are reasonable in relation to anticipated benefits, if any, to subjects, and the importance of the knowledge that may reasonably be expected to result. In evaluating risks and benefits, the IRB should consider only those risks and benefits that may result from the research (as distinguished from risks and benefits of therapies subjects would receive even if not participating in the research). The IRB should not consider possible long-range effects of applying knowledge gained in the research (for example, the possible effects of the research on public policy) as among those research risks that fall within the purview of its responsibility.

(3) Selection of subjects is equitable. In making this assessment the IRB should take into account the purposes of the research and the setting in which the research will be conducted and should be particularly cognizant of the special problems of research involving vulnerable populations, such as children, prisoners, pregnant women, mentally disabled persons, or economically or educationally disadvantaged persons.

(4) Informed consent will be sought from each prospective subject or the subject's legally authorized representative, in accordance with, and to the extent required by § 219.116.

(5) Informed consent will be appropriately documented, in accordance with, and to the extent required by § 219.117.

(6) When appropriate, the research plan makes adequate provision for monitoring the data collected to ensure the safety of subjects.

(7) When appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of data.

(b) When some or all of the subjects are likely to be vulnerable to coercion or undue influence, such as children, prisoners, pregnant women, mentally disabled persons, or economically or educationally disadvantaged persons, additional safeguards have been included in the study to protect the rights and welfare of these subjects.

§ 219.112 Review by institution.

Research covered by this policy that has been approved by an IRB may be subject to further appropriate review and approval or disapproval by officials of the institution. However, those officials may not approve the research if it has not been approved by an IRB.

§ 219.113 Suspension or termination of IRB approval of research.

An IRB shall have authority to suspend or terminate approval of research that is not being conducted in accordance with the IRB's requirements or that has been associated with unexpected serious harm to subjects. Any suspension or termination of approval shall include a statement of the reasons for the IRB's action and shall be reported promptly to the investigator, appropriate institutional officials, and the department or agency head.

(Approved by the Office of Management and Budget under control number 9999-0020)

§ 219.114 Cooperative research.

Cooperative research projects are those projects covered by this policy which involve more than one institution. In the conduct of cooperative research projects, each institution is responsible for safeguarding the rights and welfare of human subjects and for complying with this policy. With the approval of the department or agency head, an institution participating in a cooperative project may enter into a joint review arrangement, rely upon the review of another qualified IRB, or make similar arrangements for avoiding duplication of effort.

EXHIBIT 1 DoD IMPLEMENTATION OF THE "COMMON RULE" (CONTINUED)

§219.115 IRB records.

(a) An institution, or when appropriate an IRB, shall prepare and maintain adequate documentation of IRB activities, including the following:

(1) Copies of all research proposals reviewed, scientific evaluations, if any, that accompany the proposals, approved sample consent documents, progress reports submitted by investigators, and reports of injuries to subjects.

(2) Minutes of IRB meetings which shall be in sufficient detail to show attendance at the meetings; actions taken by the IRB; the vote on these actions including the number of members voting for, against, and abstaining; the basis for requiring changes in or disapproving research; and a written summary of the discussion of controverted issues and their resolution.

(3) Records of continuing review activities.

(4) Copies of all correspondence between the IRB and the investigators.

(5) A list of IRB members in the same detail as described is §219.103(b)(3).

(6) Written procedures for the IRB in the same detail as described in §219.103(b)(4) and §219.103(b)(5).

(7) Statements of significant new findings provided to subjects, as required by §219.116(b)(5).

(b) The records required by this policy shall be retained for at least 3 years, and records relating to research which is conducted shall be retained for at least 3 years after completion of the research. All records shall be accessible for inspection and copying by authorized representatives of the department or agency at reasonable times and in a reasonable manner.

(Approved by the Office of Management and Budget under control number 9999-0020)

§219.116 General requirements for informed consent.

Except as provided elsewhere in this policy, no investigator may involve a human being as a subject in research covered by this policy unless the investigator has obtained the legally effective informed consent of the subject or the subject's legally authorized representative. An investigator shall seek such consent only under circumstances that provide the prospective subject or the representative sufficient opportunity to consider whether or not to participate and that minimize the possibility of coercion or undue influence. The information that is given to the subject or the representative shall be in language understandable to the subject or the representative. No informed consent, whether oral or written, may include any exculpatory language through which the subject or the representative is made to waive or appear to waive any of the subject's legal rights, or releases or appears to release the investigator, the sponsor, the institution or its agents from liability for negligence.

(a) Basic elements of informed consent. Except as provided in paragraph (c) or (d) of this section, in seeking informed consent the following information shall be provided to each subject:

(1) A statement that the study involves research, an explanation of the purposes of the research and the expected duration of the subject's participation, a description of the procedures to be followed, and identification of any procedures which are experimental;

(2) A description of any reasonably foreseeable risks or discomforts to the subject;

(3) A description of any benefits to the subject or to others which may reasonably be expected from the research;

(4) A disclosure of appropriate alternative procedures or courses of treatment, if any, that might be advantageous to the subject;

(5) A statement describing the extent, if any, to which confidentiality of records identifying the subject will be maintained;

(6) For research involving more than minimal risk, an explanation as to whether any compensation and an explanation as to whether any medical treatments are available if injury occurs and, if so, what they consist of, or where further information may be obtained;

(7) An explanation of whom to contact for answers to pertinent questions about the research and research subjects' rights, and whom to contact in the event of a research-related injury to the subject; and

EXHIBIT 1 DoD IMPLEMENTATION OF THE "COMMON RULE" (CONTINUED)

(8) A statement that participation is voluntary, refusal to participate will involve no penalty or loss of benefits to which the subject is otherwise entitled, and the subject may discontinue participation at any time without penalty or loss of benefits to which the subject is otherwise entitled.

(b) Additional elements of informed consent. When appropriate, one or more of the following elements of information shall also be provided to each subject:

(1) A statement that the particular treatment or procedure may involve risks to the subject (or to the embryo or fetus, if the subject is or may become pregnant) which are currently unforeseeable;

(2) Anticipated circumstances under which the subject's participation may be terminated by the investigator without regard to the subject's consent;

(3) Any additional costs to the subject that may result from participation in the research;

(4) The consequences of a subject's decision to withdraw from the research and procedures for orderly termination of participation by the subject;

(5) A statement that significant new findings developed during the course of the research which may relate to the subject's willingness to continue participation will be provided to the subject; and

(6) The approximate number of subjects involved in the study.

(c) An IRB may approve a consent procedure which does not include, or which alters, some or all of the elements of informed consent set forth above, or waive the requirement to obtain informed consent provided the IRB finds and documents that:

(1) The research or demonstration project is to be conducted by or subject to the approval of state or local government officials and is designed to study, evaluate, or otherwise examine:

(i) Public benefit of service programs;

(ii) Procedures for obtaining benefits or services under those programs:

(iii) Possible changes in or alternatives to those programs or procedures; or

(iv) Possible changes in methods or levels of payment for benefits or services under those programs; and

(2) The research could not practicably be carried out without the waiver or alteration.

(d) An IRB may approve a consent procedure which does not include, or which alters, some or all of the elements of informed consent set forth in this section, or waive the requirements to obtain informed consent provided the IRB finds and documents that:

(1) The research involves no more than minimal risk to the subjects;

(2) The waiver or alteration will not adversely affect the rights and welfare of the subjects;

(3) The research could not practicably be carried out without the waiver or alteration; and

(4) Whenever appropriate, the subjects will be provided with additional pertinent information after participation.

(e) The informed consent requirements in this policy are not intended to preempt any applicable federal, state, or local laws which require additional information to be disclosed in order for informed consent to be legally effective.

(f) Nothing in this policy is intended to limit the authority of a physician to provide emergency medical care, to the extent the physician is permitted to do so under applicable federal, state, or local law.

(Approved by the Office of Management and Budget under control number 9999-0020)

§219.117 Documentation of informed consent.

(a) Except as provided in paragraph (c) of this section, informed consent shall be documented by the use of a written consent form approved by the IRB and signed by the subject or the subject's legally authorized representative. A copy shall be given to the person signing the form.

(b) Except as provided in paragraph (c) of this section, the consent form may be either of the following:

(1) A written consent document that embodies the elements of informed consent required by §219.116. This form

EXHIBIT 1 DoD IMPLEMENTATION OF THE "COMMON RULE" (CONTINUED)

may be read to the subject or the subject's legally authorized representative, but in any event, the investigator shall give either the subject or the representative adequate opportunity to read it before it is signed; or

(2) A short form written consent document stating that the elements of informed consent required by §219.116 have been presented orally to the subject or the subject's legally authorized representative. When this method is used, there shall be a witness to the oral presentation. Also, the IRB shall approve a written summary of what is to be said to the subject or the representative. Only the short form itself is to be signed by the subject or the representative. However, the witness shall sign both the short form and a copy of the summary, and the person actually obtaining consent shall sign a copy of the summary. A copy of the summary shall be given to the subject or the representative, in addition to a copy of the short form.

(c) An IRB may waive the requirement for the investigator to obtain a signed consent form for some or all subjects if it finds either:

(1) That the only record linking the subject and the research would be the consent document and the principal risk would be potential harm resulting from a breach of confidentiality. Each subject will be asked whether the subject wants documentation linking the subject with the research, and the subject's wishes will govern; or

(2) That the research presents no more than minimal risk of harm to subjects and involves no procedures for which written consent is normally required outside of the research context. In cases in which the documentation requirement is waived, the IRB may require the investigator to provide subjects with a written statement regarding the research.

(Approved by the Office of Management and Budget under control number 9999-0020)

§219.118 Applications and proposals lacking definite plans for involvement of human subjects.

Certain types of applications for grants, cooperative agreements, or contracts are submitted to departments or agencies with the knowledge that subjects may be involved within the period of support, but definite plans would not normally be set forth in the application or proposal. These include activities such as institutional type grants when selection of specific projects is the institution's responsibility; research training grants in which the activities involving subjects remain to be selected; and projects in which human subjects' involvement will depend upon completion of instruments, prior animal studies, or purification of compounds. These applications need not be reviewed by an IRB before an award may be made. However, except for research exempted or waived under §219.101 (b) or (i), no human subjects may be involved in any project supported by these awards until the project has been reviewed and approved by the IRB, as provided in this policy, and certification submitted, by the institution, to the department or agency.

§219.119 Research undertaken without the intention of involving human subjects.

In the event research is undertaken without the intention of involving human subjects, but it is later proposed to involve human subjects in the research, the research shall first be reviewed and approved by an IRB, as provided in this policy, a certification submitted, by the institution, to the department or agency, and final approval given to the proposed change by the department or agency.

§219.120 Evaluation and disposition of applications and proposals for research to be conducted or supported by a Federal Department or Agency.

(a) The department or agency head will evaluate all applications and proposals involving human subjects submitted to the department or agency through such officers and employees of the department or agency and such experts and consultants as the department or agency head determines to be appropriate. This evaluation will take into consideration the risks to the subjects, the adequacy of protection against these risks, the potential benefits of the research to the subjects and others, and the importance of the knowledge gained or to be gained.

EXHIBIT 1 DoD IMPLEMENTATION OF THE "COMMON RULE" (CONTINUED)

(b) On the basis of this evaluation, the department or agency head may approve or disapprove the application or proposal, or enter into negotiations to develop an approvable one.

§219.121 [Reserved]

§219.122 Use of Federal funds.

Federal funds administered by a department or agency may not be expended for research involving human subjects unless the requirements of this policy have been satisfied.

§219.123 Early termination of research support: Evaluation of applications and proposals.

(a) The department or agency head may require that department or agency support for any project be terminated or suspended in the manner prescribed in applicable program requirements, when the department or agency head finds an institution has materially failed to comply with the terms of this policy.

(b) In making decisions about supporting or approving applications or proposals covered by this policy the department or agency head may take into account, in addition to all other eligibility requirements and program criteria, factors such as whether the applicant has been subject to a termination or suspension under paragarph (a) of this section and whether the applicant or the person or persons who would direct or has have directed the scientific and technical aspects of an activity has have, in the judgment of the department or agency head, materially failed to discharge responsibility for the protection of the rights and welfare of human subjects (whether or not the research was subject to federal regulation).

§219.124 Conditions.

With respect to any research project or any class of research projects the department or agency head may impose additional conditions prior to or at the time of approval when in the judgment of the department or agency head additional conditions are necessary for the protection of human subjects.

EXHIBIT 2 EXECUTIVE ORDER 12891: ADVISORY COMMITTEE ON HUMAN RADIATION EXPERIMENTS

THE WHITE HOUSE

Office of the Press Secretary

For Immediate Release January 18, 1994

EXECUTIVE ORDER

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ADVISORY COMMITTEE ON HUMAN RADIATION EXPERIMENTS

By the authority vested in me as President by the Constitution and the laws of the United States of America, it is hereby ordered as follows:

Section 1. Establishment. (a) There shall be established an Advisory Committee on Human Radiation Experiments (the "Advisory Committee" or "Committee"). The Advisory Committee shall be composed of not more than 15 members to be appointed or designated by the President. The Advisory Committee shall comply with the Federal Advisory Committee Act, as amended, 5 U.S.C. App. 2.

(b) The President shall designate a Chairperson from among the members of the Advisory Committee.

Sec. 2. Functions. (a) There has been established a Human Radiation Interagency Working Group, the members of which include the Secretary of Energy, the Secretary of Defense, the Secretary of Health and Human Services, the Secretary of Veterans Affairs, the Attorney General, the Administrator of the National Aeronautics and Space Administration, the Director of Central Intelligence, and the Director of the Office of Management and Budget. As set forth in paragraph (b) of this section, the Advisory Committee shall provide to the Human Radiation Interagency Working Group advice and recommendations on the ethical and scientific standards applicable to human radiation experiments carried out or sponsored by the United States Government. As used herein, "human radiation experiments" means:

(1) experiments on individuals involving intentional exposure to ionizing radiation. This category does not include common and routine clinical practices, such as established diagnosis and treatment methods, involving incidental exposures to ionizing radiation;

(2) experiments involving intentional environmental releases of radiation that (A) were designed to test human health effects of ionizing radiation; or (B) were designed to test the extent of human exposure to ionizing radiation.

Consistent with the provisions set forth in paragraph (b) of this section, the Advisory Committee shall also provide advice, information, and recommendations on the following experiments:

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EXHIBIT 2 EXECUTIVE ORDER 12891: ADVISORY COMMITTEE ON HREs (CONTINUED)

(1) the experiment into the atmospheric diffusion of radioactive gases and test of detectability, commonly referred to as "the Green Run test," by the former Atomic Energy Commission (AEC) and the Air Force in December 1949 at the Hanford Reservation in Richland, Washington;

(2) two radiation warfare field experiments conducted at the AEC's Oak Ridge office in 1948 involving gamma radiation released from non-bomb point sources at or near ground level;

(3) six tests conducted during 1949-1952 of radiation warfare ballistic dispersal devices containing radioactive agents at the U.S. Army's Dugway, Utah, site;

(4) four atmospheric radiation-tracking tests in 1950 at Los Alamos, New Mexico; and

(5) any other similar experiment that may later be identified by the Human Radiation Interagency Working Group.

The Advisory Committee shall review experiments conducted from 1944 to May 30, 1974. Human radiation experiments undertaken after May 30, 1974, the date of issuance of the Department of Health, Education, and Welfare ("DHEW") Regulations for the Protection of Human Subjects (45 C.F.R. 46), may be sampled to determine whether further inquiry into experiments is warranted. Further inquiry into experiments conducted after May 30, 1974, may be pursued if the Advisory Committee determines, with the concurrence of the Human Radiation Interagency Working Group, that such inquiry is warranted.

(b)(1) The Advisory Committee shall determine the ethical and scientific standards and criteria by which it shall evaluate human radiation experiments, as set forth in paragraph (a) of this section. The Advisory Committee shall consider whether (A) there was a clear medical or scientific purpose for the experiments; (B) appropriate medical follow-up was conducted; and (C) the experiments' design and administration adequately met the ethical and scientific standards, including standards of informed consent, that prevailed at the time of the experiments and that exist today.

(2) The Advisory Committee shall evaluate the extent to which human radiation experiments were consistent with applicable ethical and scientific standards as determined by the Committee pursuant to paragraph (b)(1) of this section. If deemed necessary for such an assessment, the Committee may carry out a detailed review of experiments and associated records to the extent permitted by law.

(3) If required to protect the health of individuals who were subjects of a human radiation experiment, or their descendants, the Advisory Committee may recommend to the Human Radiation Interagency Working Group that an agency notify particular subjects of an experiment, or their descendants, of any potential health risk or the need for medical follow-up.

EXHIBIT 2 EXECUTIVE ORDER 12891: ADVISORY COMMITTEE ON HREs (CONTINUED)

(4) The Advisory Committee may recommend further policies, as needed, to ensure compliance with recommended ethical and scientific standards for human radiation experiments.

(5) The Advisory Committee may carry out such additional functions as the Human Radiation Interagency Working Group may from time to time request.

Sec. 3. Administration. (a) The heads of executive departments and agencies shall, to the extent permitted by law, provide the Advisory Committee with such information as it may require for purposes of carrying out its functions.

(b) Members of the Advisory Committee shall be compensated in accordance with Federal law. Committee members may be allowed travel expenses, including per diem in lieu of subsistence, to the extent permitted by law for persons serving intermittently in the government service (5 U.S.C. 5701-5707).

(c) To the extent permitted by law, and subject to the availability of appropriations, the Department of Energy shall provide the Advisory Committee with such funds as may be necessary for the performance of its functions.

Sec. 4. General Provisions. (a) Notwithstanding the provisions of any other Executive order, the functions of the President under the Federal Advisory Committee Act that are applicable to the Advisory Committee, except that of reporting annually to the Congress, shall be performed by the Human Radiation Interagency Working Group, in accordance with the guidelines and procedures established by the Administrator of General Services.

(b) The Advisory Committee shall terminate 30 days after submitting its final report to the Human Radiation Interagency Working Group.

(c) This order is intended only to improve the internal management of the executive branch and it is not intended to create any right, benefit, trust, or responsibility, substantive or procedural, enforceable at law or equity by a party against the United States, its agencies, its officers, or any person.

WILLIAM J. CLINTON

THE WHITE HOUSE,
January 15, 1994.

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EXHIBIT 2 EXECUTIVE ORDER 12891: ADVISORY COMMITTEE ON HREs (CONTINUED)

CHARTER

ADVISORY COMMITTEE ON HUMAN RADIATION EXPERIMENTS

1. Committee's Official Designation

   Advisory Committee on Human Radiation Experiments (the "Advisory Committee" or "Committee").

2. Authority

   Executive Order No. 12891.

3. Objectives and Scope of Activities

   There has been established a Human Radiation Interagency Working Group (the "Interagency Working Group"), the members of which include the Secretary of Energy, the Secretary of Defense, the Secretary of Health and Human Services, the Secretary of Veterans' Affairs, the Attorney General, the Administrator of the National Aeronautics and Space Administration, the Director of Central Intelligence, and the Director of the Office of Management and Budget. As set forth in section 4 of this Charter, the Advisory Committee shall provide to the Interagency Working Group advice and recommendations on the ethical and scientific standards applicable to human radiation experiments carried out or sponsored by the United States Government. As used herein, "human radiation experiments" means:

   (1) Experiments on individuals involving intentional exposure to ionizing radiation. This category does not include common and routine clinical practices, such as established diagnosis and treatment methods, involving incidental exposures to ionizing radiation.

   (2) Experiments involving intentional environmental releases of radiation that (A) were designed to test human health effects of ionizing radiation; or (B) were designed to test the extent of human exposure to ionizing radiation.

EXHIBIT 2 EXECUTIVE ORDER 12891: ADVISORY COMMITTEE ON HREs (CONTINUED)

Consistent with the provisions set forth in section 4 of this Charter, the Advisory Committee also shall provide advice, information and recommendations on the following experiments:

(1) The experiment into the atmospheric diffusion of radioactive gases and test of detectability, commonly referred to as "the Green Run test," by the former Atomic Energy Commission (AEC) and the Air Force in December 1949 in Hanford, Washington;

(2) Two radiation warfare field experiments conducted at the AEC's Oak Ridge office in 1948 involving gamma radiation released from non-bomb point sources at or near ground level;

(3) Six tests conducted during 1949-1952 of radiation warfare ballistic dispersal devices containing radioactive agents at the U.S. Army's Dugway, Utah site;

(4) Four atmospheric radiation-tracking tests in 1950 at Los Alamos, New Mexico; and

(5) Any other similar experiments which may later be identified by the Interagency Working Group.

The Advisory Committee shall review experiments conducted from 1944 to May 30, 1974, the date of issuance of the Department of Health, Education and Welfare Regulations for the Protection of Human Subjects (45 C.F.R. 46), may be sampled to determine whether further inquiry into experiments is warranted. Further inquiry into experiments conducted after May 30, 1974, may be pursued if the Advisory Committee determines, with the concurrence of the Interagency Working Group, that such inquiry is warranted.

4. Description of Duties for which Committee is Responsible

The duties of the Advisory Committee are solely advisory and shall be:

a. The Advisory Committee shall determine the ethical and scientific standards and criteria by which it shall evaluate human radiation experiments, as set forth in section 3 of this Charter. The Advisory Committee shall consider whether (A) there was a clear medical or scientific purpose for the experiments; (B) appropriate medical follow-up was conducted; and (C) the experiments' design and administration adequately met the ethical and scientific standards, including standards of informed consent, that prevailed at the time of the experiments and that exist today.

EXHIBIT 2 EXECUTIVE ORDER 12891: ADVISORY COMMITTEE ON HREs (CONTINUED)

b. The Advisory Committee shall evaluate the extent to which human radiation experiments were consistent with applicable ethical and scientific standards as determined by the Committee pursuant to paragraph (a) of this section. If deemed necessary for such an assessment, the Advisory Committee may carry out a detailed review of experiments and associated records to the extent permitted by law.

c. If required to protect the health of individuals who were subjects of a human radiation experiment, or their descendants, the Advisory Committee may recommend to the Interagency Working Group that an agency notify particular subjects of an experiment, or their descendants, of any potential health risk or the need for medical follow-up.

d. The Advisory Committee may recommend further policies, as needed, to ensure compliance with recommended ethical and scientific standards for human radiation experiments.

e. The Advisory Committee may carry out such additional functions as the Interagency Working Group may from time to time request.

5. To Whom the Advisory Committee Reports

The Advisory Committee shall report to the Interagency Working Group.

The Advisory Committee shall submit its final report to the Interagency Working Group within one year of the date of the first meeting of the Advisory Committee, unless such period is extended by the Interagency Working Group. The Advisory Committee shall issue an interim report not more than six months after the date of the first meeting of the Advisory Committee. That interim report shall advise the Interagency Working Group on the status of the Advisory Committee's proceedings and the likelihood that the Committee will be able to complete its duties within one year of the date of the first meeting of the Advisory Committee.

6. Duration and Termination Date

The Advisory Committee shall terminate thirty days after submission of its final report to the Interagency Working Group. This Charter shall expire one year plus thirty days after the first meeting of the Advisory Committee, subject to renewal and extension by the President.

EXHIBIT 2 EXECUTIVE ORDER 12891: ADVISORY COMMITTEE ON HREs (CONTINUED)

7. Agency responsible for providing financial and administrative support to the Advisory Committee

   Financial and administrative support shall be provided by the Department of Energy.

8. Estimated Annual Operating Costs

   $3 million.

9. Estimated Number and Frequency of Meetings

   The Advisory Committee shall meet as it deems necessary to complete its functions.

10. Subcommittees

    To facilitate functioning of the Advisory Committee, subcommittee(s) may be formed. The objectives of the subcommittee(s) are to make recommendations to the Advisory Committee with respect to matters related to the responsibilities of the Advisory Committee. Subcommittees shall meet as the Advisory Committee deems appropriate.

11. Members

    Up to a maximum of fifteen Advisory Committee members shall be appointed by the President for a term of one year, which may be extended by the President. Committee members shall be compensated in accordance with federal law. Committee members may be allowed travel expenses, including per diem in lieu of subsistence, to the extent permitted by law for persons serving intermittently in the government service (5 U.S.C. §§ 5701-5707).

12. Chairperson

    The President shall designate a Chairperson from among the members of the Advisory Committee.

EXHIBIT 3 RETRIEVAL AND INVENTORY OF RECORDS OF HREs

THE WHITE HOUSE

WASHINGTON

January 19, 1994

MEMORANDUM FOR HEADS OF DEPARTMENTS AND AGENCIES

FROM: CHRISTINE A. VARNEY
Secretary to the Cabinet

SUBJECT: Retrieval and Inventory of Records of Human Radiation Experiments

1. Each Agency should establish forthwith an initial procedure for locating records of human radiation experiments conducted by the Agency or under a contract or grant of the Agency. Agencies should coordinate the development of procedures for the retrieval and inventory of records with the Human Radiation Interagency Working Group (the "Interagency Working Group")[1] to ensure, where appropriate, that common procedures for the retrieval and inventory of records are applied at each Agency. Each Agency should provide to the Interagency Working Group a written copy of its initial directive and other documents implementing the Agency's record location, retrieval and inventory procedures.

2. (a) As used herein, "Agency" means Department of Defense, Department of Energy, Department of Health and Human Services, Central Intelligence Agency, Department of Veterans Affairs, and National Aeronautics and Space Administration.

(b) As used herein, "human radiation experiments" means:

(1) Experiments on individuals involving intentional exposure to ionizing radiation. This category does not include common and routine clinical practices, such as established diagnosis and treatment methods, involving incidental exposures to ionizing radiation.

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[1] The members of the Human Radiation Interagency Working Group include the Secretary of Energy, the Secretary of Defense, the Secretary of Health and Human Services, the Secretary of Veterans Affairs, the Attorney General, the Administrator of the National Aeronautics and Space Administration, the Director of Central Intelligence, and the Director of the Office of Management and Budget.

EXHIBIT 3 RETRIEVAL AND INVENTORY OF RECORDS OF HREs (CONTINUED)

(2) Experiments involving intentional environmental releases of radiation that (A) were designed to test human health effects of ionizing radiation; or (B) were designed to test the extent of human exposure to ionizing radiation.

3. In addition, Agencies should establish forthwith a procedure for retrieval and inventory of records of the following experiments:

(a) The experiment into the atmospheric diffusion of radioactive gases and test of detectability, commonly referred to as "the Green Run test," by the former Atomic Energy Commission (AEC) and the Air Force in December 1949 in Hanford, Washington;

(b) Two radiation warfare field experiments conducted at the AEC's Oak Ridge office in 1948 involving gamma radiation released from non-bomb point sources at or near ground level;

(c) Six tests conducted during 1949-1952 of radiation warfare ballistic dispersal devices containing radioactive agents at the U.S. Army's Dugway, Utah site;

(d) Four atmospheric radiation-tracking tests in 1950 at Los Alamos, New Mexico; and

(e) Any other similar human experiments that may later be identified by the Interagency Working Group.

Each agency should include in the directive described in paragraph 1 above a directive initiating the Agency's retrieval and inventory procedure for records of the experiments set forth in this paragraph.

4. The procedures to be established pursuant to paragraph 1 above should address records for human radiation experiments conducted from 1944 to the present. Human radiation experiments undertaken after May 30, 1974, the date of issuance of the Department of Health, Education and Welfare Regulations for the Protection of Human Subjects (45 C.F.R. 46), may be sampled to determine whether further inquiry into such experiments is warranted. Further inquiry into such experiments conducted after May 30, 1974, may be pursued if the Advisory Committee on Human Radiation Experiments (to be established pursuant to Executive Order 12891 (Jan. 15, 1994)) determines, with the concurrence of the Interagency Working Group, that such inquiry is warranted.

EXHIBIT 3 RETRIEVAL AND INVENTORY OF RECORDS OF HREs (CONTINUED)

5. To the extent permitted by law, each Agency Head should institute procedures, consistent with paragraphs 6 and 7 below, for notifying and making records available to individuals subjected to human radiation experiments or the experiments set forth in paragraph 3 above, and/or their next of kin. Agencies should coordinate the development of these procedures with the Interagency Working Group.

6. Each Agency Head should institute procedures, consistent with existing statutes and regulations, for making records on human radiation experiments, and the experiments set forth in paragraph 3 above, available to members of the public. In implementing these procedures, each Agency Head should immediately issue an order to all elements of the Agency, and undertake all appropriate procedures to instruct and inform the Agency's grantees, contractors or other agents:

   (a) Not to destroy any records relating to human radiation experiments or the experiments set forth in paragraph 3 above.

   (b) To locate forthwith all records relating to human radiation experiments and the experiments set forth in paragraph 3 above; and to identify, and undertake all appropriate procedures with regard to, any such records in the possession of grantees, contractors or other agents of the Agencies. Agencies should work together, in coordination with the Interagency Working Group, to standardize the retrieval of such records, which may involve the transfer of files to one or more designated repositories.

7. Each agency should also:

   (a) Upon locating the records, review all records of human radiation experiments, and the experiments set forth in paragraph 3 above, for national security classification and declassify such records as soon as practicable and to the maximum extent possible. Agencies should avail themselves of every opportunity to cooperate in expediting the declassification process.

   (b) Before making any copies of such records available to the public, make any redactions required for the protection of personal privacy interests of individuals subjected to human radiation experiments or the experiments set forth in paragraph 3 above, and/or their next of kin.

8. Agencies should work together with the Interagency Working Group to standardize, where appropriate, the inventory of

EXHIBIT 3 RETRIEVAL AND INVENTORY OF RECORDS OF HREs (CONTINUED)

records of human radiation experiments and the experiments set forth in paragraph 3 above.

9. Agencies should document the procedures implemented to search for, retrieve and inventory records of human radiation experiments and the experiments set forth in paragraph 3 above.

10. In developing guidelines for retrieval and inventory of records, Agencies should consider advice and information provided to the Interagency Working Group by the Advisory Committee on Human Radiation Experiments.

EXHIBIT 4 REVIEW OF FEDERAL POLICY FOR THE PROTECTION OF HUMAN SUBJECTS

Office of the Press Secretary

For Immediate Release February 17, 1994

February 17, 1994

MEMORANDUM FOR THE VICE PRESIDENT
THE HEADS OF EXECUTIVE DEPARTMENTS
AND AGENCIES

SUBJECT: Review of Federal Policy for the Protection of Human Subjects

Federally funded biomedical and behavioral research has resulted in major advances in health care and improved the quality of life for all Americans. The pursuit of new knowledge in these fields of research often requires experiments that involve human subjects. Although human subjects research is an essential element of biomedical and behavioral research, bioethical considerations must influence the design and conduct of such research.

Since 1947, when guidelines for research with human subjects were promulgated, there has been increasingly widespread recognition of the need for voluntary and informed consent and a scientifically valid design of experiments involving human subjects.

Over time, this recognition has evolved into a rigorous and formalized system of regulations and guidelines, which were codified in governmental policies on human subject research, and were included in the former Department of Health, Education and Welfare's regulations in 1974, 45 C.F.R. 46. In 1991, 16 agencies formally adopted the core of these regulations in a common Federal Policy for the Protection of Human Subjects. This Policy requires that all research protocols involving human subjects be reviewed by an Institutional Review Board. This review ensures that (1) risks are minimized and reasonable in relation to anticipated benefits; (2) there is informed consent; and (3) the rights and welfare of the subjects are maintained (56 Fed. Reg. 28003 (June 18, 1991)).

Although these regulations provide the framework for protecting human subjects in research, we must exercise constant care and ensure that these regulations are strictly enforced by departments and agencies. Therefore, I direct each department and agency of Government to review present practices to assure compliance with the Federal Policy for the Protection of Human Subjects and to cease immediately sponsoring or conducting any experiments involving humans that do not fully comply with the Federal Policy.

WILLIAM J. CLINTON

# # #

EXHIBIT 5 EXECUTIVE ORDER 12958: CLASSIFIED NATIONAL SECURITY INFORMATION

EXECUTIVE ORDER

12958

CLASSIFIED NATIONAL SECURITY INFORMATION

This order prescribes a uniform system for classifying, safeguarding, and declassifying national security information. Our democratic principles require that the American people be informed of the activities of their Government. Also, our Nation's progress depends on the free flow of information. Nevertheless, throughout our history, the national interest has required that certain information be maintained in confidence in order to protect our citizens, our democratic institutions, and our participation within the community of nations. Protecting information critical to our Nation's security remains a priority. In recent years, however, dramatic changes have altered, although not eliminated, the national security threats that we confront. These changes provide a greater opportunity to emphasize our commitment to open Government.

NOW, THEREFORE, by the authority vested in me as President by the Constitution and the laws of the United States of America, it is hereby ordered as follows:

PART 1 ORIGINAL CLASSIFICATION

Section 1.1. Definitions. For purposes of this order:

(a) "National security" means the national defense or foreign relations of the United States.

(b) "Information" means any knowledge that can be communicated or documentary material, regardless of its physical form or characteristics, that is owned by, produced by or for, or is under the control of the United States Government. "Control" means the authority of the agency that originates information, or its successor in function, to regulate access to the information.

(c) "Classified national security information" (hereafter "classified information") means information that has been

EXHIBIT 5 EXECUTIVE ORDER 12958: CLASSIFIED NATIONAL SECURITY INFORMATION (CONTINUED)

determined pursuant to this order or any predecessor order to require protection against unauthorized disclosure and is marked to indicate its classified status when in documentary form.

(d) "Foreign Government Information" means:

(1) information provided to the United States Government by a foreign government or governments, an international organization of governments, or any element thereof, with the expectation that the information, the source of the information, or both, are to be held in confidence;

(2) information produced by the United States pursuant to or as a result of a joint arrangement with a foreign government or governments, or an international organization of governments, or any element thereof, requiring that the information, the arrangement, or both, are to be held in confidence; or

(3) information received and treated as "Foreign Government Information" under the terms of a predecessor order.

(e) "Classification" means the act or process by which information is determined to be classified information.

(f) "Original classification" means an initial determination that information requires, in the interest of national security, protection against unauthorized disclosure.

(g) "Original classification authority" means an individual authorized in writing, either by the President, or by agency heads or other officials designated by the President, to classify information in the first instance.

(h) "Unauthorized disclosure" means a communication or physical transfer of classified information to an unauthorized recipient.

(i) "Agency" means any "Executive agency," as defined in 5 U.S.C. 105, and any other entity within the executive branch that comes into the possession of classified information.

EXHIBIT 5 EXECUTIVE ORDER 12958: CLASSIFIED NATIONAL SECURITY INFORMATION (CONTINUED)

(j) "Senior agency official" means the official designated by the agency head under section 5.6(c) of this order to direct and administer the agency's program under which information is classified, safeguarded, and declassified.

(k) "Confidential source" means any individual or organization that has provided, or that may reasonably be expected to provide, information to the United States on matters pertaining to the national security with the expectation that the information or relationship, or both, are to be held in confidence.

(l) "Damage to the national security" means harm to the national defense or foreign relations of the United States from the unauthorized disclosure of information, to include the sensitivity, value, and utility of that information.

Sec. 1.2. Classification Standards. (a) Information may be originally classified under the terms of this order only if all of the following conditions are met:

(1) an original classification authority is classifying the information;

(2) the information is owned by, produced by or for, or is under the control of the United States Government;

(3) the information falls within one or more of the categories of information listed in section 1.5 of this order; and

(4) the original classification authority determines that the unauthorized disclosure of the information reasonably could be expected to result in damage to the national security and the original classification authority is able to identify or describe the damage.

(b) If there is significant doubt about the need to classify information, it shall not be classified. This provision does not:

EXHIBIT 5 EXECUTIVE ORDER 12958: CLASSIFIED NATIONAL SECURITY INFORMATION (CONTINUED)

(1) amplify or modify the substantive criteria or procedures for classification; or

(2) create any substantive or procedural rights subject to judicial review.

(c) Classified information shall not be declassified automatically as a result of any unauthorized disclosure of identical or similar information.

Sec. 1.3. Classification Levels. (a) Information may be classified at one of the following three levels:

(1) "Top Secret" shall be applied to information, the unauthorized disclosure of which reasonably could be expected to cause exceptionally grave damage to the national security that the original classification authority is able to identify or describe.

(2) "Secret" shall be applied to information, the unauthorized disclosure of which reasonably could be expected to cause serious damage to the national security that the original classification authority is able to identify or describe.

(3) "Confidential" shall be applied to information, the unauthorized disclosure of which reasonably could be expected to cause damage to the national security that the original classification authority is able to identify or describe.

(b) Except as otherwise provided by statute, no other terms shall be used to identify United States classified information.

(c) If there is significant doubt about the appropriate level of classification, it shall be classified at the lower level.

Sec. 1.4. Classification Authority. (a) The authority to classify information originally may be exercised only by:

(1) the President;

EXHIBIT 5 EXECUTIVE ORDER 12958: CLASSIFIED NATIONAL SECURITY INFORMATION (CONTINUED)

(2) agency heads and officials designated by the President in the Federal Register; or

(3) United States Government officials delegated this authority pursuant to paragraph (c), below.

(b) Officials authorized to classify information at a specified level are also authorized to classify information at a lower level.

(c) Delegation of original classification authority.

(1) Delegations of original classification authority shall be limited to the minimum required to administer this order. Agency heads are responsible for ensuring that designated subordinate officials have a demonstrable and continuing need to exercise this authority.

(2) "Top Secret" original classification authority may be delegated only by the President or by an agency head or official designated pursuant to paragraph (a)(2), above.

(3) "Secret" or "Confidential" original classification authority may be delegated only by the President; an agency head or official designated pursuant to paragraph (a)(2), above; or the senior agency official, provided that official has been delegated "Top Secret" original classification authority by the agency head.

(4) Each delegation of original classification authority shall be in writing and the authority shall not be redelegated except as provided in this order. Each delegation shall identify the official by name or position title.

(d) Original classification authorities must receive training in original classification as provided in this order and its implementing directives.

EXHIBIT 5 EXECUTIVE ORDER 12958: CLASSIFIED NATIONAL SECURITY INFORMATION (CONTINUED)

(e) Exceptional cases. When an employee, contractor, licensee, certificate holder, or grantee of an agency that does not have original classification authority originates information believed by that person to require classification, the information shall be protected in a manner consistent with this order and its implementing directives. The information shall be transmitted promptly as provided under this order or its implementing directives to the agency that has appropriate subject matter interest and classification authority with respect to this information. That agency shall decide within 30 days whether to classify this information. If it is not clear which agency has classification responsibility for this information, it shall be sent to the Director of the Information Security Oversight Office. The Director shall determine the agency having primary subject matter interest and forward the information, with appropriate recommendations, to that agency for a classification determination.

Sec. 1.5. Classification Categories. Information may not be considered for classification unless it concerns:

(a) military plans, weapons systems, or operations;

(b) foreign government information;

(c) intelligence activities (including special activities), intelligence sources or methods, or cryptology;

(d) foreign relations or foreign activities of the United States, including confidential sources;

(e) scientific, technological, or economic matters relating to the national security;

(f) United States Government programs for safeguarding nuclear materials or facilities; or

(g) vulnerabilities or capabilities of systems, installations, projects or plans relating to the national security.

EXHIBIT 5 EXECUTIVE ORDER 12958: CLASSIFIED NATIONAL SECURITY INFORMATION (CONTINUED)

Sec. 1.6. Duration of Classification. (a) At the time of original classification, the original classification authority shall attempt to establish a specific date or event for declassification based upon the duration of the national security sensitivity of the information. The date or event shall not exceed the time frame in paragraph (b), below.

(b) If the original classification authority cannot determine an earlier specific date or event for declassification, information shall be marked for declassification 10 years from the date of the original decision, except as provided in paragraph (d), below.

(c) An original classification authority may extend the duration of classification or reclassify specific information for successive periods not to exceed 10 years at a time if such action is consistent with the standards and procedures established under this order. This provision does not apply to information contained in records that are more than 25 years old and have been determined to have permanent historical value under title 44, United States Code.

(d) At the time of original classification, the original classification authority may exempt from declassification within 10 years specific information, the unauthorized disclosure of which could reasonably be expected to cause damage to the national security for a period greater than that provided in paragraph (b), above, and the release of which could reasonably be expected to:

(1) reveal an intelligence source, method, or activity, or a cryptologic system or activity;

(2) reveal information that would assist in the development or use of weapons of mass destruction;

(3) reveal information that would impair the development or use of technology within a United States weapons system;

EXHIBIT 5 EXECUTIVE ORDER 12958: CLASSIFIED NATIONAL SECURITY INFORMATION (CONTINUED)

(4) reveal United States military plans, or national security emergency preparedness plans;

(5) reveal foreign government information;

(6) damage relations between the United States and a foreign government, reveal a confidential source, or seriously undermine diplomatic activities that are reasonably expected to be ongoing for a period greater than that provided in paragraph (b), above;

(7) impair the ability of responsible United States Government officials to protect the President, the Vice President, and other individuals for whom protection services, in the interest of national security, are authorized; or

(8) violate a statute, treaty, or international agreement.

(e) Information marked for an indefinite duration of classification under predecessor orders, for example, "Originating Agency's Determination Required," or information classified under predecessor orders that contains no declassification instructions shall be declassified in accordance with part 3 of this order.

Sec. 1.7. Identification and Markings. (a) At the time of original classification, the following shall appear on the face of each classified document, or shall be applied to other classified media in an appropriate manner:

(1) one of the three classification levels defined in section 1.3 of this order;

(2) the identity, by name or personal identifier and position, of the original classification authority;

(3) the agency and office of origin, if not otherwise evident;

(4) declassification instructions, which shall indicate one of the following:

EXHIBIT 5 EXECUTIVE ORDER 12958: CLASSIFIED NATIONAL SECURITY INFORMATION (CONTINUED)

(A) the date or event for declassification, as prescribed in section 1.6(a) or section 1.6(c); or

(B) the date that is 10 years from the date of original classification, as prescribed in section 1.6(b); or

(C) the exemption category from declassification, as prescribed in section 1.6(d); and

(5) a concise reason for classification which, at a minimum, cites the applicable classification categories in section 1.5 of this order.

(b) Specific information contained in paragraph (a), above, may be excluded if it would reveal additional classified information.

(c) Each classified document shall, by marking or other means, indicate which portions are classified, with the applicable classification level, which portions are exempt from declassification under section 1.6(d) of this order, and which portions are unclassified. In accordance with standards prescribed in directives issued under this order, the Director of the Information Security Oversight Office may grant waivers of this requirement for specified classes of documents or information. The Director shall revoke any waiver upon a finding of abuse.

(d) Markings implementing the provisions of this order, including abbreviations and requirements to safeguard classified working papers, shall conform to the standards prescribed in implementing directives issued pursuant to this order.

(e) Foreign government information shall retain its original classification markings or shall be assigned a U.S. classification that provides a degree of protection at least equivalent to that required by the entity that furnished the information.

EXHIBIT 5 EXECUTIVE ORDER 12958: CLASSIFIED NATIONAL SECURITY INFORMATION (CONTINUED)

(f) Information assigned a level of classification under this or predecessor orders shall be considered as classified at that level of classification despite the omission of other required markings. Whenever such information is used in the derivative classification process or is reviewed for possible declassification, holders of such information shall coordinate with an appropriate classification authority for the application of omitted markings.

(g) The classification authority shall, whenever practicable, use a classified addendum whenever classified information constitutes a small portion of an otherwise unclassified document.

Sec. 1.8. Classification Prohibitions and Limitations.

(a) In no case shall information be classified in order to:

(1) conceal violations of law, inefficiency, or administrative error;

(2) prevent embarrassment to a person, organization, or agency;

(3) restrain competition; or

(4) prevent or delay the release of information that does not require protection in the interest of national security.

(b) Basic scientific research information not clearly related to the national security may not be classified.

(c) Information may not be reclassified after it has been declassified and released to the public under proper authority.

(d) Information that has not previously been disclosed to the public under proper authority may be classified or reclassified after an agency has received a request for it under the Freedom of Information Act (5 U.S.C. 552) or the Privacy Act of 1974 (5 U.S.C. 552a), or the mandatory review provisions of section 3.6 of this order only if such classification meets the requirements of this order and is accomplished on a document-by-document basis with the personal participation or

EXHIBIT 5 EXECUTIVE ORDER 12958: CLASSIFIED NATIONAL SECURITY INFORMATION (CONTINUED)

under the direction of the agency head, the deputy agency head, or the senior agency official designated under section 5.6 of this order. This provision does not apply to classified information contained in records that are more than 25 years old and have been determined to have permanent historical value under title 44, United States Code.

(e) Compilations of items of information which are individually unclassified may be classified if the compiled information reveals an additional association or relationship that:

(1) meets the standards for classification under this order; and

(2) is not otherwise revealed in the individual items of information.

As used in this order, "compilation" means an aggregation of pre-existing unclassified items of information.

Sec. 1.9. Classification Challenges. (a) Authorized holders of information who, in good faith, believe that its classification status is improper are encouraged and expected to challenge the classification status of the information in accordance with agency procedures established under paragraph (b), below.

(b) In accordance with implementing directives issued pursuant to this order, an agency head or senior agency official shall establish procedures under which authorized holders of information are encouraged and expected to challenge the classification of information that they believe is improperly classified or unclassified. These procedures shall assure that:

(1) individuals are not subject to retribution for bringing such actions;

(2) an opportunity is provided for review by an impartial official or panel; and

EXHIBIT 5 EXECUTIVE ORDER 12958: CLASSIFIED NATIONAL SECURITY INFORMATION (CONTINUED)

(3) individuals are advised of their right to appeal agency decisions to the Interagency Security Classification Appeals Panel established by section 5.4 of this order.

PART 2 DERIVATIVE CLASSIFICATION

Sec. 2.1. Definitions. For purposes of this order:

(a) "Derivative classification" means the incorporating, paraphrasing, restating or generating in new form information that is already classified, and marking the newly developed material consistent with the classification markings that apply to the source information. Derivative classification includes the classification of information based on classification guidance. The duplication or reproduction of existing classified information is not derivative classification.

(b) "Classification guidance" means any instruction or source that prescribes the classification of specific information.

(c) "Classification guide" means a documentary form of classification guidance issued by an original classification authority that identifies the elements of information regarding a specific subject that must be classified and establishes the level and duration of classification for each such element.

(d) "Source document" means an existing document that contains classified information that is incorporated, paraphrased, restated, or generated in new form into a new document.

(e) "Multiple sources" means two or more source documents, classification guides, or a combination of both.

Sec. 2.2. Use of Derivative Classification. (a) Persons who only reproduce, extract, or summarize classified information, or who only apply classification markings derived from source material or as directed by a classification guide, need not possess original classification authority.

EXHIBIT 5 EXECUTIVE ORDER 12958: CLASSIFIED NATIONAL SECURITY INFORMATION (CONTINUED)

(b) Persons who apply derivative classification markings shall:

(1) observe and respect original classification decisions; and

(2) carry forward to any newly created documents the pertinent classification markings. For information derivatively classified based on multiple sources, the derivative classifier shall carry forward:

(A) the date or event for declassification that corresponds to the longest period of classification among the sources; and

(B) a listing of these sources on or attached to the official file or record copy.

Sec. 2.3. Classification Guides. (a) Agencies with original classification authority shall prepare classification guides to facilitate the proper and uniform derivative classification of information. These guides shall conform to standards contained in directives issued under this order.

(b) Each guide shall be approved personally and in writing by an official who:

(1) has program or supervisory responsibility over the information or is the senior agency official; and

(2) is authorized to classify information originally at the highest level of classification prescribed in the guide.

(c) Agencies shall establish procedures to assure that classification guides are reviewed and updated as provided in directives issued under this order.

PART 3 DECLASSIFICATION AND DOWNGRADING

Sec. 3.1. Definitions. For purposes of this order:

(a) "Declassification" means the authorized change in the status of information from classified information to unclassified information.

EXHIBIT 5 EXECUTIVE ORDER 12958: CLASSIFIED NATIONAL SECURITY INFORMATION (CONTINUED)

(b) "Automatic declassification" means the declassification of information based solely upon:

(1) the occurrence of a specific date or event as determined by the original classification authority; or

(2) the expiration of a maximum time frame for duration of classification established under this order.

(c) "Declassification authority" means:

(1) the official who authorized the original classification, if that official is still serving in the same position;

(2) the originator's current successor in function;

(3) a supervisory official of either; or

(4) officials delegated declassification authority in writing by the agency head or the senior agency official.

(d) "Mandatory declassification review" means the review for declassification of classified information in response to a request for declassification that meets the requirements under section 3.6 of this order.

(e) "Systematic declassification review" means the review for declassification of classified information contained in records that have been determined by the Archivist of the United States ("Archivist") to have permanent historical value in accordance with chapter 33 of title 44, United States Code.

(f) "Declassification guide" means written instructions issued by a declassification authority that describes the elements of information regarding a specific subject that may be declassified and the elements that must remain classified.

(g) "Downgrading" means a determination by a declassification authority that information classified and safeguarded at a specified level shall be classified and safeguarded at a lower level.

EXHIBIT 5 EXECUTIVE ORDER 12958: CLASSIFIED NATIONAL SECURITY INFORMATION (CONTINUED)

(h) "File series" means documentary material, regardless of its physical form or characteristics, that is arranged in accordance with a filing system or maintained as a unit because it pertains to the same function or activity.

Sec. 3.2. Authority for Declassification. (a) Information shall be declassified as soon as it no longer meets the standards for classification under this order.

(b) It is presumed that information that continues to meet the classification requirements under this order requires continued protection. In some exceptional cases, however, the need to protect such information may be outweighed by the public interest in disclosure of the information, and in these cases the information should be declassified. When such questions arise, they shall be referred to the agency head or the senior agency official. That official will determine, as an exercise of discretion, whether the public interest in disclosure outweighs the damage to national security that might reasonably be expected from disclosure. This provision does not:

(1) amplify or modify the substantive criteria or procedures for classification; or

(2) create any substantive or procedural rights subject to judicial review.

(c) If the Director of the Information Security Oversight Office determines that information is classified in violation of this order, the Director may require the information to be declassified by the agency that originated the classification. Any such decision by the Director may be appealed to the President through the Assistant to the President for National Security Affairs. The information shall remain classified pending a prompt decision on the appeal.

(d) The provisions of this section shall also apply to agencies that, under the terms of this order, do not have original classification authority, but had such authority under predecessor orders.

EXHIBIT 5 EXECUTIVE ORDER 12958: CLASSIFIED NATIONAL SECURITY INFORMATION (CONTINUED)

Sec. 1.3. Transferred Information. (a) In the case of classified information transferred in conjunction with a transfer of functions, and not merely for storage purposes, the receiving agency shall be deemed to be the originating agency for purposes of this order.

(b) In the case of classified information that is not officially transferred as described in paragraph (a), above, but that originated in an agency that has ceased to exist and for which there is no successor agency, each agency in possession of such information shall be deemed to be the originating agency for purposes of this order. Such information may be declassified or downgraded by the agency in possession after consultation with any other agency that has an interest in the subject matter of the information.

(c) Classified information accessioned into the National Archives and Records Administration ("National Archives") as of the effective date of this order shall be declassified or downgraded by the Archivist in accordance with this order, the directives issued pursuant to this order, agency declassification guides, and any existing procedural agreement between the Archivist and the relevant agency head.

(d) The originating agency shall take all reasonable steps to declassify classified information contained in records determined to have permanent historical value before they are accessioned into the National Archives. However, the Archivist may require that records containing classified information be accessioned into the National Archives when necessary to comply with the provisions of the Federal Records Act. This provision does not apply to information being transferred to the Archivist pursuant to section 2203 of title 44, United States Code, or information for which the National Archives and Records Administration serves as the custodian of the records of an agency or organization that goes out of existence.

EXHIBIT 5 EXECUTIVE ORDER 12958: CLASSIFIED NATIONAL SECURITY INFORMATION (CONTINUED)

(e) To the extent practicable, agencies shall adopt a system of records management that will facilitate the public release of documents at the time such documents are declassified pursuant to the provisions for automatic declassification in sections 1.6 and 3.4 of this order.

Sec. 3.4. Automatic Declassification. (a) Subject to paragraph (b), below, within 5 years from the date of this order, all classified information contained in records that (1) are more than 25 years old, and (2) have been determined to have permanent historical value under title 44, United States Code, shall be automatically declassified whether or not the records have been reviewed. Subsequently, all classified information in such records shall be automatically declassified no longer than 25 years from the date of its original classification, except as provided in paragraph (b), below.

(b) An agency head may exempt from automatic declassification under paragraph (a), above, specific information, the release of which should be expected to:

(1) reveal the identity of a confidential human source, or reveal information about the application of an intelligence source or method, or reveal the identity of a human intelligence source when the unauthorized disclosure of that source would clearly and demonstrably damage the national security interests of the United States;

(2) reveal information that would assist in the development or use of weapons of mass destruction;

(3) reveal information that would impair U.S. cryptologic systems or activities;

(4) reveal information that would impair the application of state of the art technology within a U.S. weapon system;

(5) reveal actual U.S. military war plans that remain in effect;

EXHIBIT 5 EXECUTIVE ORDER 12958: CLASSIFIED NATIONAL SECURITY INFORMATION (CONTINUED)

(6) reveal information that would seriously and demonstrably impair relations between the United States and a foreign government, or seriously and demonstrably undermine ongoing diplomatic activities of the United States;

(7) reveal information that would clearly and demonstrably impair the current ability of United States Government officials to protect the President, Vice President, and other officials for whom protection services, in the interest of national security, are authorized;

(8) reveal information that would seriously and demonstrably impair current national security emergency preparedness plans; or

(9) violate a statute, treaty, or international agreement.

(c) No later than the effective date of this order, an agency head shall notify the President through the Assistant to the President for National Security Affairs of any specific file series of records for which a review or assessment has determined that the information within those file series almost invariably falls within one or more of the exemption categories listed in paragraph (b), above, and which the agency proposes to exempt from automatic declassification. The notification shall include:

(1) a description of the file series;

(2) an explanation of why the information within the file series is almost invariably exempt from automatic declassification and why the information must remain classified for a longer period of time; and

(3) except for the identity of a confidential human source or a human intelligence source, as provided in paragraph (b), above, a specific date or event for declassification of the information.

EXHIBIT 5 EXECUTIVE ORDER 12958: CLASSIFIED NATIONAL SECURITY INFORMATION (CONTINUED)

The President may direct the agency head not to exempt the file series or to declassify the information within that series at an earlier date than recommended.

(d) At least 180 days before information is automatically declassified under this section, an agency head or senior agency official shall notify the Director of the Information Security Oversight Office, serving as Executive Secretary of the Interagency Security Classification Appeals Panel, of any specific information beyond that included in a notification to the President under paragraph (c), above, that the agency proposes to exempt from automatic declassification. The notification shall include:

(1) a description of the information;

(2) an explanation of why the information is exempt from automatic declassification and must remain classified for a longer period of time; and

(3) except for the identity of a confidential human source or a human intelligence source, as provided in paragraph (b), above, a specific date or event for declassification of the information. The Panel may direct the agency not to exempt the information or to declassify it at an earlier date than recommended. The agency head may appeal such a decision to the President through the Assistant to the President for National Security Affairs. The information will remain classified while such an appeal is pending.

(e) No later than the effective date of this order, the agency head or senior agency official shall provide the Director of the Information Security Oversight Office with a plan for compliance with the requirements of this section, including the establishment of interim target dates. Each such plan shall include the requirement that the agency declassify at least 15 percent of the records affected by this section no later than

EXHIBIT 5 EXECUTIVE ORDER 12958: CLASSIFIED NATIONAL SECURITY INFORMATION (CONTINUED)

1 year from the effective date of this order, and similar commitments for subsequent years until the effective date for automatic declassification.

(f) Information exempted from automatic declassification under this section shall remain subject to the mandatory and systematic declassification review provisions of this order.

(g) The Secretary of State shall determine when the United States should commence negotiations with the appropriate officials of a foreign government or international organization of governments to modify any treaty or international agreement that requires the classification of information contained in records affected by this section for a period longer than 25 years from the date of its creation, unless the treaty or international agreement pertains to information that may otherwise remain classified beyond 25 years under this section.

Sec. 3.5. Systematic Declassification Review. (a) Each agency that has originated classified information under this order or its predecessors shall establish and conduct a program for systematic declassification review. This program shall apply to historically valuable records exempted from automatic declassification under section 3.4 of this order. Agencies shall prioritize the systematic review of records based upon:

(1) recommendations of the Information Security Policy Advisory Council, established in section 5.5 of this order, on specific subject areas for systematic review concentration; or

(2) the degree of researcher interest and the likelihood of declassification upon review.

(b) The Archivist of the shall conduct a systematic declassification review program for classified information: (1) accessioned into the National Archives as of the effective date of this order; (2) information transferred to the Archivist pursuant to section 2203 of title 44, United States Code; and (3) information for which the National Archives and Records

EXHIBIT 5 EXECUTIVE ORDER 12958: CLASSIFIED NATIONAL SECURITY INFORMATION (CONTINUED)

Administration serves as the custodian of the records of an agency or organization that has gone out of existence. This program shall apply to pertinent records no later than 25 years from the date of their creation. The Archivist shall establish priorities for the systematic review of these records based upon the recommendations of the Information Security Policy Advisory Council; or the degree of researcher interest and the likelihood of declassification upon review. These records shall be reviewed in accordance with the standards of this order, its implementing directives, and declassification guides provided to the Archivist by each agency that originated the records. The Director of the Information Security Oversight Office shall assure that agencies provide the Archivist with adequate and current declassification guides.

(c) After consultation with affected agencies, the Secretary of Defense may establish special procedures for systematic review for declassification of classified cryptologic information, and the Director of Central Intelligence may establish special procedures for systematic review for declassification of classified information pertaining to intelligence activities (including special activities), or intelligence sources or methods.

Sec. 3.6. Mandatory Declassification Review. (a) Except as provided in paragraph (b), below, all information classified under this order or predecessor orders shall be subject to a review for declassification by the originating agency if:

(1) the request for a review describes the document or material containing the information with sufficient specificity to enable the agency to locate it with a reasonable amount of effort;

(2) the information is not exempted from search and review under the Central Intelligence Agency Information Act; and

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(3) the information has not been reviewed for declassification within the past 2 years. If the agency has reviewed the information within the past 2 years, or the information is the subject of pending litigation, the agency shall inform the requester of this fact and of the requester's appeal rights.

(b) Information originated by:

(1) the incumbent President;

(2) the incumbent President's White House Staff;

(3) committees, commissions, or boards appointed by the incumbent President; or

(4) other entities within the Executive Office of the President that solely advise and assist the incumbent President is exempted from the provisions of paragraph (a), above. However, the Archivist shall have the authority to review, downgrade, and declassify information of former Presidents under the control of the Archivist pursuant to sections 2107, 2111, 2111 note, or 2203 of title 44, United States Code. Review procedures developed by the Archivist shall provide for consultation with agencies having primary subject matter interest and shall be consistent with the provisions of applicable laws or lawful agreements that pertain to the respective Presidential papers or records. Agencies with primary subject matter interest shall be notified promptly of the Archivist's decision. Any final decision by the Archivist may be appealed by the requester or an agency to the Interagency Security Classification Appeals Panel. The information shall remain classified pending a prompt decision on the appeal.

(c) Agencies conducting a mandatory review for declassification shall declassify information that no longer meets the standards for classification under this order. They

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shall release this information unless withholding is otherwise authorized and warranted under applicable law.

(d) In accordance with directives issued pursuant to this order, agency heads shall develop procedures to process requests for the mandatory review of classified information. These procedures shall apply to information classified under this or predecessor orders. They also shall provide a means for administratively appealing a denial of a mandatory review request, and for notifying the requester of the right to appeal a final agency decision to the Interagency Security Classification Appeals Panel.

(e) After consultation with affected agencies, the Secretary of Defense shall develop special procedures for the review of cryptologic information, the Director of Central Intelligence shall develop special procedures for the review of information pertaining to intelligence activities (including special activities), or intelligence sources or methods, and the Archivist shall develop special procedures for the review of information accessioned into the National Archives.

Sec. 3.7. Processing Requests and Reviews. In response to a request for information under the Freedom of Information Act, the Privacy Act of 1974, or the mandatory review provisions of this order, or pursuant to the automatic declassification or systematic review provisions of this order:

(a) An agency may refuse to confirm or deny the existence or nonexistence of requested information whenever the fact of its existence or nonexistence is itself classified under this order.

(b) When an agency receives any request for documents in its custody that contain information that was originally classified by another agency, or comes across such documents in the process of the automatic declassification or systematic review provisions of this order, it shall refer copies of any request and the pertinent documents to the originating agency

EXHIBIT 5 EXECUTIVE ORDER 12958: CLASSIFIED NATIONAL SECURITY INFORMATION (CONTINUED)

for processing, and may, after consultation with the originating agency, inform any requester of the referral unless such association is itself classified under this order. In cases in which the originating agency determines in writing that a response under paragraph (a), above, is required, the referring agency shall respond to the requester in accordance with that paragraph.

Sec. 3.8. Declassification Database. (a) The Archivist in conjunction with the Director of the Information Security Oversight Office and those agencies that originate classified information, shall establish a Governmentwide database of information that has been declassified. The Archivist shall also explore other possible uses of technology to facilitate the declassification process.

(b) Agency heads shall fully cooperate with the Archivist in these efforts.

(c) Except as otherwise authorized and warranted by law, all declassified information contained within the database established under paragraph (a), above, shall be available to the public.

PART 4 SAFEGUARDING

Sec. 4.1. Definitions. For purposes of this order: (a) "Safeguarding" means measures and controls that are prescribed to protect classified information.

(b) "Access" means the ability or opportunity to gain knowledge of classified information.

(c) "Need-to-know" means a determination made by an authorized holder of classified information that a prospective recipient requires access to specific classified information in order to perform or assist in a lawful and authorized governmental function.

(d) "Automated information system" means an assembly of computer hardware, software, or firmware configured to collect,

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create, communicate, compute, disseminate, process, store, or control data or information.

(e) "Integrity" means the state that exists when information is unchanged from its source and has not been accidentally or intentionally modified, altered, or destroyed.

(f) "Network" means a system of two or more computers that can exchange data or information.

(g) "Telecommunications" means the preparation, transmission, or communication of information by electronic means.

(h) "Special access program" means a program established for a specific class of classified information that imposes safeguarding and access requirements that exceed those normally required for information at the same classification level.

Sec. 4.2. General Restrictions on Access. (a) A person may have access to classified information provided that:

(1) a favorable determination of eligibility for access has been made by an agency head or the agency head's designee;

(2) the person has signed an approved nondisclosure agreement; and

(3) the person has a need-to-know the information.

(b) Classified information shall remain under the control of the originating agency or its successor in function. An agency shall not disclose information originally classified by another agency without its authorization. An official or employee leaving agency service may not remove classified information from the agency's control.

(c) Classified information may not be removed from official premises without proper authorization.

(d) Persons authorized to disseminate classified information outside the executive branch shall assure the protection of the information in a manner equivalent to that provided within the executive branch.

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(e) Consistent with law, directives, and regulation, an agency head or senior agency official shall establish uniform procedures to ensure that automated information systems, including networks and telecommunications systems, that collect, create, communicate, compute, disseminate, process, or store classified information have controls that:

(1) prevent access by unauthorized persons; and

(2) ensure the integrity of the information.

(f) Consistent with law, directives, and regulation, each agency head or senior agency official shall establish controls to ensure that classified information is used, processed, stored, reproduced, transmitted, and destroyed under conditions that provide adequate protection and prevent access by unauthorized persons.

(g) Consistent with directives issued pursuant to this order, an agency shall safeguard foreign government information under standards that provide a degree of protection at least equivalent to that required by the government or international organization of governments that furnished the information. When adequate to achieve equivalency, these standards may be less restrictive than the safeguarding standards that ordinarily apply to United States "Confidential" information, including allowing access to individuals with a need-to-know who have not otherwise been cleared for access to classified information or executed an approved nondisclosure agreement.

(h) Except as provided by statute or directives issued pursuant to this order, classified information originating in one agency may not be disseminated outside any other agency to which it has been made available without the consent of the originating agency. An agency head or senior agency official may waive this requirement for specific information originated within that agency. For purposes of this section, the Department of Defense shall be considered one agency.

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Sec. 4.3. Distribution Controls. (a) Each agency shall establish controls over the distribution of classified information to assure that it is distributed only to organizations or individuals eligible for access who also have a need-to-know the information.

(b) Each agency shall update, at least annually, the automatic, routine, or recurring distribution of classified information that they distribute. Recipients shall cooperate fully with distributors who are updating distribution lists and shall notify distributors whenever a relevant change in status occurs.

Sec. 4.4. Special Access Programs. (a) Establishment of special access programs. Unless otherwise authorized by the President, only the Secretaries of State, Defense and Energy, and the Director of Central Intelligence, or the principal deputy of each, may create a special access program. For special access programs pertaining to intelligence activities (including special activities, but not including military operational, strategic and tactical programs), or intelligence sources or methods, this function will be exercised by the Director of Central Intelligence. These officials shall keep the number of these programs at an absolute minimum, and shall establish them only upon a specific finding that:

(1) the vulnerability of, or threat to, specific information is exceptional; and

(2) the normal criteria for determining eligibility for access applicable to information classified at the same level are not deemed sufficient to protect the information from unauthorized disclosure; or

(3) the program is required by statute.

(b) Requirements and Limitations. (1) Special access programs shall be limited to programs in which the number of persons who will have access ordinarily will be reasonably small and commensurate with the objective of providing enhanced protection for the information involved.

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(2) Each agency head shall establish and maintain a system of accounting for special access programs consistent with directives issued pursuant to this order.

(3) Special access programs shall be subject to the oversight program established under section 5.6(c) of this order. In addition, the Director of the Information Security Oversight Office shall be afforded access to these programs, in accordance with the security requirements of each program, in order to perform the functions assigned to the Information Security Oversight Office under this order. An agency head may limit access to a special access program to the Director and no more than one other employee of the Information Security Oversight Office; or, for special access programs that are extraordinarily sensitive and vulnerable, to the Director only.

(4) The agency head or principal deputy shall review annually each special access program to determine whether it continues to meet the requirements of this order.

(5) Upon request, an agency shall brief the Assistant to the President for National Security Affairs, or his or her designee, on any or all of the agency's special access programs.

(c) Within 180 days after the effective date of this order, each agency head or principal deputy shall review all existing special access programs under the agency's jurisdiction. These officials shall terminate any special access programs that do not clearly meet the provisions of this order. Each existing special access program that an agency head or principal deputy validates shall be treated as if it were established on the effective date of this order.

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(d) Nothing in this order shall supersede any requirement made by or under 10 U.S.C. 119.

Sec. 4.5. Access by Historical Researchers and Former Presidential Appointees. (a) The requirement in section 4.2(a)(3) of this order that access to classified information may be granted only to individuals who have a need-to-know the information may be waived for persons who:

(1) are engaged in historical research projects; or

(2) previously have occupied policy-making positions to which they were appointed by the President.

(b) Waivers under this section may be granted only if the agency head or senior agency official of the originating agency:

(1) determines in writing that access is consistent with the interest of national security;

(2) takes appropriate steps to protect classified information from unauthorized disclosure or compromise, and ensures that the information is safeguarded in a manner consistent with this order; and

(3) limits the access granted to former Presidential appointees to items that the person originated, reviewed, signed, or received while serving as a Presidential appointee.

PART 5 IMPLEMENTATION AND REVIEW

Sec. 5.1. Definitions. For purposes of this order:

(a) "Self-inspection" means the internal review and evaluation of individual agency activities and the agency as a whole with respect to the implementation of the program established under this order and its implementing directives.

(b) "Violation" means:

(1) any knowing, willful, or negligent action that could reasonably be expected to result in an unauthorized disclosure of classified information;

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(2) any knowing, willful, or negligent action to classify or continue the classification of information contrary to the requirements of this order or its implementing directives; or

(3) any knowing, willful, or negligent action to create or continue a special access program contrary to the requirements of this order.

(c) "Infraction" means any knowing, willful, or negligent action contrary to the requirements of this order or its implementing directives that does not comprise a "violation," as defined above.

Sec. 5.2. Program Direction. (a) The Director of the Office of Management and Budget, in consultation with the Assistant to the President for National Security Affairs and the co-chairs of the Security Policy Board, shall issue such directives as are necessary to implement this order. These directives shall be binding upon the agencies. Directives issued by the Director of the Office of Management and Budget shall establish standards for:

(1) classification and marking principles;

(2) agency security education and training programs;

(3) agency self-inspection programs; and

(4) classification and declassification guides.

(b) The Director of the Office of Management and Budget shall delegate the implementation and monitorship functions of this program to the Director of the Information Security Oversight Office.

(c) The Security Policy Board, established by a Presidential Decision Directive, shall make a recommendation to the President through the Assistant to the President for National Security Affairs with respect to the issuance of a Presidential directive on safeguarding classified information. The Presidential directive shall pertain to the handling, storage, distribution, transmittal, and destruction of and accounting for classified information.

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Sec. 5.3. Information Security Oversight Office.

(a) There is established within the Office of Management and Budget an Information Security Oversight Office. The Director of the Office of Management and Budget shall appoint the Director of the Information Security Oversight Office, subject to the approval of the President.

(b) Under the direction of the Director of the Office of Management and Budget acting in consultation with the Assistant to the President for National Security Affairs, the Director of the Information Security Oversight Office shall:

(1) develop directives for the implementation of this order;

(2) oversee agency actions to ensure compliance with this order and its implementing directives;

(3) review and approve agency implementing regulations and agency guides for systematic declassification review prior to their issuance by the agency;

(4) have the authority to conduct on-site reviews of each agency's program established under this order, and to require of each agency those reports, information, and other cooperation that may be necessary to fulfill its responsibilities. If granting access to specific categories of classified information would pose an exceptional national security risk, the affected agency head or the senior agency official shall submit a written justification recommending the denial of access to the Director of the Office of Management and Budget within 60 days of the request for access. Access shall be denied pending a prompt decision by the Director of the Office of Management and Budget, who shall consult on this decision with the Assistant to the President for National Security Affairs;

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(5) review requests for original classification authority from agencies or officials not granted original classification authority and, if deemed appropriate, recommend Presidential approval through the Director of the Office of Management and Budget;

(6) consider and take action on complaints and suggestions from persons within or outside the Government with respect to the administration of the program established under this order;

(7) have the authority to prescribe, after consultation with affected agencies, standardization of forms or procedures that will promote the implementation of the program established under this order;

(8) report at least annually to the President on the implementation of this order; and

(9) convene and chair interagency meetings to discuss matters pertaining to the program established by this order.

Sec. 5.4. Interagency Security Classification Appeals Panel. (a) Establishment and Administration.

(1) There is established an Interagency Security Classification Appeals Panel ("Panel"). The Secretaries of State and Defense, the Attorney General, the Director of Central Intelligence, the Archivist of the United States, and the Assistant to the President for National Security Affairs shall each appoint a senior level representative to serve as a member of the Panel. The President shall select the Chair of the Panel from among the Panel members.

(2) A vacancy on the Panel shall be filled as quickly as possible as provided in paragraph (1), above.

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(3) The Director of the Information Security Oversight Office shall serve as the Executive Secretary. The staff of the Information Security Oversight Office shall provide program and administrative support for the Panel.

(4) The members and staff of the Panel shall be required to meet eligibility for access standards in order to fulfill the Panel's functions.

(5) The Panel shall meet at the call of the Chair. The Chair shall schedule meetings as may be necessary for the Panel to fulfill its functions in a timely manner.

(6) The Information Security Oversight Office shall include in its reports to the President a summary of the Panel's activities.

(b) Functions. The Panel shall:

(1) decide on appeals by persons who have filed classification challenges under section 1.9 of this order;

(2) approve, deny, or amend agency exemptions from automatic declassification as provided in section 3.4 of this order; and

(3) decide on appeals by persons or entities who have filed requests for mandatory declassification review under section 3.6 of this order.

(c) Rules and Procedures. The Panel shall issue bylaws, which shall be published in the Federal Register no later than 120 days from the effective date of this order. The bylaws shall establish the rules and procedures that the Panel will follow in accepting, considering, and issuing decisions on appeals. The rules and procedures of the Panel shall provide that the Panel will consider appeals only on actions in which: (1) the appellant has exhausted his or her administrative remedies within the responsible agency; (2) there is no current

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action pending on the issue within the federal courts; and (3) the information has not been the subject of review by the federal courts or the Panel within the past 2 years.

(d) Agency heads will cooperate fully with the Panel so that it can fulfill its functions in a timely and fully informed manner. An agency head may appeal a decision of the Panel to the President through the Assistant to the President for National Security Affairs. The Panel will report to the President through the Assistant to the President for National Security Affairs any instance in which it believes that an agency head is not cooperating fully with the Panel.

(e) The Appeals Panel is established for the sole purpose of advising and assisting the President in the discharge of his constitutional and discretionary authority to protect the national security of the United States. Panel decisions are committed to the discretion of the Panel, unless reversed by the President.

Sec. 5.5. Information Security Policy Advisory Council. (a) Establishment. There is established an Information Security Policy Advisory Council ("Council"). The Council shall be composed of seven members appointed by the President for staggered terms not to exceed 4 years, from among persons who have demonstrated interest and expertise in an area related to the subject matter of this order and are not otherwise employees of the Federal Government. The President shall appoint the Council Chair from among the members. The Council shall comply with the Federal Advisory Committee Act, as amended, 5 U.S.C. App. 2.

(b) Functions. The Council shall:

(1) advise the President, the Assistant to the President for National Security Affairs, the Director of the Office of Management and Budget, or such other executive branch officials as it deems appropriate, on

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policies established under this order or its implementing directives, including recommended changes to those policies;

(2) provide recommendations to agency heads for specific subject areas for systematic declassification review; and

(3) serve as a forum to discuss policy issues in dispute.

(c) Meetings. The Council shall meet at least twice each calendar year, and as determined by the Assistant to the President for National Security Affairs or the Director of the Office of Management and Budget.

(d) Administration.

(1) Each Council member may be compensated at a rate of pay not to exceed the daily equivalent of the annual rate of basic pay in effect for grade GS-18 of the general schedule under section 5376 of title 5, United States Code, for each day during which that member is engaged in the actual performance of the duties of the Council.

(2) While away from their homes or regular place of business in the actual performance of the duties of the Council, members may be allowed travel expenses, including per diem in lieu of subsistence, as authorized by law for persons serving intermittently in the Government service (5 U.S.C. 5703(b)).

(3) To the extent permitted by law and subject to the availability of funds, the Information Security Oversight Office shall provide the Council with administrative services, facilities, staff, and other support services necessary for the performance of its functions.

(4) Notwithstanding any other Executive order, the

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functions of the President under the Federal Advisory Committee Act, as amended, that are applicable to the Council, except that of reporting to the Congress, shall be performed by the Director of the Information Security Oversight Office in accordance with the guidelines and procedures established by the General Services Administration.

Sec. 5.6. General Responsibilities. Heads of agencies that originate or handle classified information shall:

(a) demonstrate personal commitment and commit senior management to the successful implementation of the program established under this order;

(b) commit necessary resources to the effective implementation of the program established under this order; and

(c) designate a senior agency official to direct and administer the program, whose responsibilities shall include:

(1) overseeing the agency's program established under this order, provided, an agency head may designate a separate official to oversee special access programs authorized under this order. This official shall provide a full accounting of the agency's special access programs at least annually;

(2) promulgating implementing regulations, which shall be published in the Federal Register to the extent that they affect members of the public;

(3) establishing and maintaining security education and training programs;

(4) establishing and maintaining an ongoing self-inspection program, which shall include the periodic review and assessment of the agency's classified product;

(5) establishing procedures to prevent unnecessary access to classified information, including procedures that: (i) require that a need for access to

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classified information is established before initiating administrative clearance procedures; and (ii) ensure that the number of persons granted access to classified information is limited to the minimum consistent with operational and security requirements and needs;

(6) developing special contingency plans for the safeguarding of classified information used in or near hostile or potentially hostile areas;

(7) assuring that the performance contract or other system used to rate civilian or military personnel performance includes the management of classified information as a critical element or item to be evaluated in the rating of: (i) original classification authorities; (ii) security managers or security specialists; and (iii) all other personnel whose duties significantly involve the creation or handling of classified information;

(8) accounting for the costs associated with the implementation of this order, which shall be reported to the Director of the Information Security Oversight Office for publication; and

(9) assigning in a prompt manner agency personnel to respond to any request, appeal, challenge, complaint, or suggestion arising out of this order that pertains to classified information that originated in a component of the agency that no longer exists and for which there is no clear successor in function.

Sec. 5.7. Sanctions. (a) If the Director of the Information Security Oversight Office finds that a violation of this order or its implementing directives may have occurred, the Director shall make a report to the head of the agency or to the senior agency official so that corrective steps, if appropriate, may be taken.

EXHIBIT 5 EXECUTIVE ORDER 12958: CLASSIFIED NATIONAL SECURITY INFORMATION (CONTINUED)

(b) Officers and employees of the United States Government, and its contractors, licensees, certificate holders, and grantees shall be subject to appropriate sanctions if they knowingly, willfully, or negligently:

(1) disclose to unauthorized persons information properly classified under this order or predecessor orders;

(2) classify or continue the classification of information in violation of this order or any implementing directive;

(3) create or continue a special access program contrary to the requirements of this order; or

(4) contravene any other provision of this order or its implementing directives.

(c) Sanctions may include reprimand, suspension without pay, removal, termination of classification authority, loss or denial of access to classified information, or other sanctions in accordance with applicable law and agency regulation.

(d) The agency head, senior agency official, or other supervisory official shall, at a minimum, promptly remove the classification authority of any individual who demonstrates reckless disregard or a pattern of error in applying the classification standards of this order.

(e) The agency head or senior agency official shall:

(1) take appropriate and prompt corrective action when a violation or infraction under paragraph (b), above, occurs; and

(2) notify the Director of the Information Security Oversight Office when a violation under paragraph (b)(1), (2) or (3), above, occurs.

PART 6 GENERAL PROVISIONS

Sec. 6.1. General Provisions. (a) Nothing in this order shall supersede any requirement made by or under the Atomic Energy Act of 1954, as amended, or the National Security Act of 1947, as amended. "Restricted Data" and "Formerly Restricted

EXHIBIT 5 EXECUTIVE ORDER 12958: CLASSIFIED NATIONAL SECURITY INFORMATION (CONTINUED)

Data" shall be handled, protected, classified, downgraded, and declassified in conformity with the provisions of the Atomic Energy Act of 1954, as amended, and regulations issued under that Act.

(b) The Attorney General, upon request by the head of an agency or the Director of the Information Security Oversight Office, shall render an interpretation of this order with respect to any question arising in the course of its administration.

(c) Nothing in this order limits the protection afforded any information by other provisions of law, including the exemptions to the Freedom of Information Act, the Privacy Act, and the National Security Act of 1947, as amended. This order is not intended, and should not be construed, to create any right or benefit, substantive or procedural, enforceable at law by a party against the United States, its agencies, its officers, or its employees. The foregoing is in addition to the specific provisos set forth in sections 1.2(b), 3.2(b) and 5.4(e) of this order.

(d) Executive Order No. 12356 of April 6, 1982, is revoked as of the effective date of this order.

Sec. 6.2. Effective Date. This order shall become effective 180 days from the date of this order.

THE WHITE HOUSE,

April 17, 1995.

EXHIBIT 6 EXECUTIVE ORDER 12975: PROTECTION OF HUMAN RESEARCH SUBJECTS

THE WHITE HOUSE

Office of the Press Secretary

12975

For Immediate Release October 3, 1995

EXECUTIVE ORDER

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PROTECTION OF HUMAN RESEARCH SUBJECTS AND
CREATION OF NATIONAL BIOETHICS ADVISORY COMMISSION

By the authority vested in me as President by the Constitution and the laws of the United States of America, it is hereby ordered as follows:

Section 1. Review of Policies and Procedures. (a) Each executive branch department and agency that conducts, supports, or regulates research involving human subjects shall promptly review the protections of the rights and welfare of human research subjects that are afforded by the department's or agency's existing policies and procedures. In conducting this review, departments and agencies shall take account of the recommendations contained in the report of the Advisory Committee on Human Radiation Experiments.

(b) Within 120 days of the date of this order, each department and agency that conducts, supports, or regulates research involving human subjects shall report the results of the review required by paragraph (a) of this section to the National Bioethics Advisory Commission, created pursuant to this order. The report shall include an identification of measures that the department or agency plans or proposes to implement to enhance human subject protections. As set forth in section 5 of this order, the National Bioethics Advisory Commission shall pursue, as its first priority, protection of the rights and welfare of human research subjects.

(c) For purposes of this order, the terms "research" and "human subject" shall have the meaning set forth in the 1991 Federal Policy for the Protection of Human Subjects.

Sec. 2. Research Ethics. Each executive branch department and agency that conducts, supports, or regulates research involving human subjects shall, to the extent practicable and appropriate, develop professional and public educational programs to enhance activities related to human subjects protection, provide forums for addressing ongoing and emerging issues in human subjects research, and familiarize professionals engaged in nonfederally-funded research with the ethical considerations associated with conducting research involving human subjects. Where appropriate, such professional and educational programs should be organized and conducted with the participation of medical schools, universities, scientific societies, voluntary health organizations, or other interested parties.

Sec. 3. Establishment of National Bioethics Advisory Commission. (a) There is hereby established a National Bioethics Advisory Commission ("NBAC"). NBAC shall be composed of not more than 15 members to be appointed by the President. NBAC shall be subject to the Federal Advisory Committee Act, as amended (5 U.S.C. App.).

(b) The President shall designate a Chairperson from among the members of NBAC.

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EXHIBIT 6 EXECUTIVE ORDER 12975: PROTECTION OF HUMAN RESEARCH SUBJECTS (CONTINUED)

Sec. 4. Functions. (a) NBAC shall provide advice and make recommendations to the National Science and Technology Council and to other appropriate government entities regarding the following matters:

(1) the appropriateness of departmental, agency, or other governmental programs, policies, assignments, missions, guidelines, and regulations as they relate to bioethical issues arising from research on human biology and behavior; and

(2) applications, including the clinical applications, of that research.

(b) NBAC shall identify broad principles to govern the ethical conduct of research, citing specific projects only as illustrations for such principles.

(c) NBAC shall not be responsible for the review and approval of specific projects.

(d) In addition to responding to requests for advice and recommendations from the National Science and Technology Council, NBAC also may accept suggestions of issues for consideration from both the Congress and the public. NBAC also may identify other bioethical issues for the purpose of providing advice and recommendations, subject to the approval of the National Science and Technology Council.

Sec. 5. Priorities. (a) As a first priority, NBAC shall direct its attention to consideration of: protection of the rights and welfare of human research subjects; and issues in the management and use of genetic information, including but not limited to, human gene patenting.

(b) NBAC shall consider four criteria in establishing the other priorities for its activities:

(1) the public health or public policy urgency of the bioethical issue;

(2) the relation of the bioethical issue to the goals for Federal investment in science and technology;

(3) the absence of another entity able to deliberate appropriately on the bioethical issue; and

(4) the extent of interest in the issue within the Federal Government.

Sec. 6. Administration. (a) The heads of executive departments and agencies shall, to the extent permitted by law, provide NBAC with such information as it may require for purposes of carrying out its functions.

(b) NBAC may conduct inquiries, hold hearings, and establish subcommittees, as necessary. The Assistant to the President for Science and Technology and the Secretary of Health and Human Services shall be notified upon establishment of each subcommittee, and shall be provided information on the name, membership (including chair), function, estimated duration, and estimated frequency of meetings of the subcommittee.

(c) NBAC is authorized to conduct analyses and develop reports or other materials. In order to augment the expertise present on NBAC, the Secretary of Health and Human Services may contract for the services of nongovernmental consultants who may conduct analyses, prepare reports and background papers, or prepare other materials for consideration by NBAC, as appropriate.

EXHIBIT 6 EXECUTIVE ORDER 12975: PROTECTION OF HUMAN RESEARCH SUBJECTS (CONTINUED)

(d) Members of NBAC shall be compensated in accordance with Federal law. Members of NBAC may be allowed travel expenses, including per diem in lieu of subsistence, to the extent permitted by law for persons serving intermittently in the government service (5 U.S.C. 5701-5707).

(e) To the extent permitted by law, and subject to the availability of appropriations, the Department of Health and Human Services shall provide NBAC with such funds as may be necessary for the performance of its functions. The Secretary of Health and Human Services shall provide management and support services to NBAC.

Sec. 7. General Provisions. (a) Notwithstanding the provisions of any other Executive order, the functions of the President under the Federal Advisory Committee Act that are applicable to NBAC, except that of reporting annually to the Congress, shall be performed by the Secretary of Health and Human Services, in accordance with the guidelines and procedures established by the Administrator of General Services.

(b) NBAC shall terminate two years from the date of this order unless extended prior to that date.

(c) This order is intended only to improve the internal management of the executive branch and it is not intended to create any right, benefit, trust, or responsibility, substantive or procedural, enforceable at law or equity by a party against the United States, its agencies, its officers, or any person.

WILLIAM J. CLINTON

THE WHITE HOUSE,
October 3, 1995.

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EXHIBIT 7 DoD HUMAN RADIATION RESEARCH REVIEW

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MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS
CHAIRMAN OF THE JOINT CHIEFS OF STAFF
UNDER SECRETARIES OF DEFENSE
DIRECTOR, DEFENSE RESEARCH AND ENGINEERING
ASSISTANT SECRETARIES OF DEFENSE
COMPTROLLER
GENERAL COUNSEL
DIRECTOR, OPERATIONAL TEST AND EVALUATION
ASSISTANTS TO THE SECRETARY OF DEFENSE
DIRECTOR OF ADMINISTRATION AND MANAGEMENT
DIRECTORS OF THE DEFENSE AGENCIES

SUBJECT: DoD Human Radiation Research Review

I have appointed Dr. Harold P. Smith, Assistant to the Secretary of Defense (Atomic Energy), as the DoD-wide focal point for the compilation and review of all Defense Department data or information related to ionizing radiation research with human subjects. He will work with the Interagency Working Group on this issue and coordinate our efforts with those of the other relevant agencies. I want to move quickly and thoroughly on this matter -- it should be given high priority.

The ATSD(AE) will chair a DoD working group to structure the process for data collection and analysis and development of a DoD overall plan of action. He will also be responsible for determining the outside organizations with which the Department has worked that might have such records, and the best way to preserve those records and obtain them for review. This ATSD(AE) led effort will be under the overall guidance of John Deutch, who is the senior department official responsible for this matter.

I request you take immediate steps to ensure that any documents or records in your office related to human ionizing radiation research are retained and not destroyed. This includes all letters, memoranda, reports, logs, handwritten notes, written procedures, and all other writings, as well as photographs, maps, and machine-readable materials. Your search should include all file indices of records retired to the Federal Records Center at Suitland, MD, or a search of those files at Suitland as appropriate. Please advise all persons responsible for routine document disposal procedures of the need to preserve these records.

EXHIBIT 7 DOD HUMAN RADIATION RESEARCH REVIEW (CONTINUED)

Veterans who participated in atmospheric nuclear testing and the occupation of Hiroshima and Nagasaki are already included in the national Nuclear Test Personnel Review (NTPR) program and are not part of this effort.

Inquiries regarding this matter should be directed to Dr. Gordon K. Soper, Principal Deputy, ATSD(AE), (703) 697-5161.

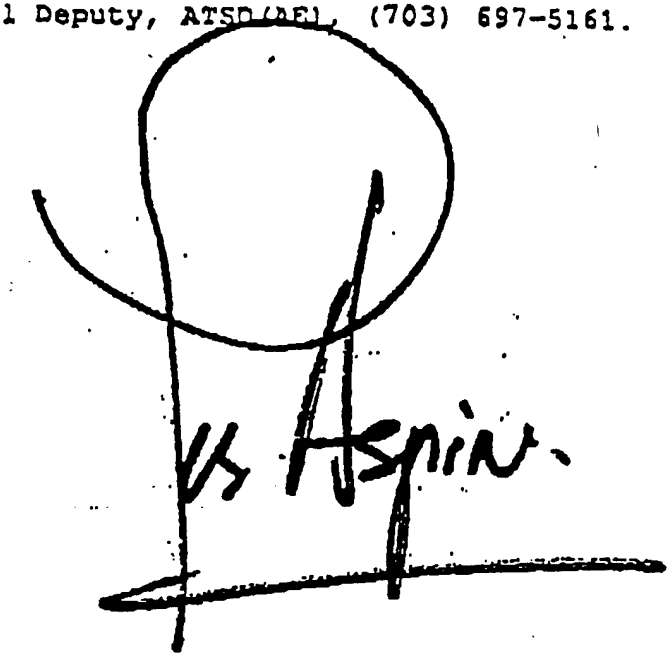

EXHIBIT 8 LOCATING RECORDS OF DOD HUMAN RADIATION EXPERIMENTS

ASSISTANT TO THE SECRETARY OF DEFENSE
3050 DEFENSE PENTAGON
WASHINGTON, DC 20301-3050

ATOMIC ENERGY

January 31, 1994

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS
CHAIRMAN OF THE JOINT CHIEFS OF STAFF
UNDERSECRETARIES OF DEFENSE
DIRECTOR, DEFENSE RESEARCH AND ENGINEERING
ASSISTANT SECRETARIES OF DEFENSE
COMPTROLLER
GENERAL COUNSEL
DIRECTOR, OPERATIONAL TEST AND EVALUATION
ASSISTANTS TO THE SECRETARY OF DEFENSE
DIRECTOR OF ADMINISTRATION AND MANAGEMENT
DIRECTORS OF THE DEFENSE AGENCIES

SUBJECT: Locating Records of DoD Human Radiation Experiments

On January 7, 1994, Secretary Aspin informed you that he had appointed me as the DoD-wide focal point for the review of human radiation experiments, and noted the high priority this task will require. He also directed that no records of human radiation experiments be destroyed. Based on the recommendations of the DoD working group, which I chair, this memorandum provides specific procedures for locating records of DoD human radiation experiments.

In the coming months, we will have requirements to carry out a number of important tasks, including: retrieval and inventory of all records of DoD human radiation experiments; provision of information to the Advisory Committee on Human Radiation Experiments, established by the President January 18; notification to subjects or next-of-kin of human radiation experiments; response to inquiries from citizens to the Department of Energy telephone hotline; release of information to the public; and others. To carry out these tasks, a Command Center has been established and other ground work begun. We are now ready to proceed with the formal information gathering process. Our objective in this is to "just get the facts" and our strategy is to fully arm the Command Center with as many of the facts as possible in order to minimize repeated queries to the field.

With this as the guide, I request from each addressee, by February 14, 1994, an initial report, and by February 28, a complete report, each consisting of two parts. Part I is the identification of DoD organizations under the authority of each addressee that, based on their missions and activities, might have conducted or sponsored human radiation experiments, together with an identification of the archives or records centers where records concerning such experiments might exist and a description of the steps taken to search those records. This information is needed both to document the completeness of the search and to establish a data

EXHIBIT 8 LOCATING RECORDS OF DOD HUMAN RADIATION EXPERIMENTS (CONTINUED)

base for resolving inquiries received through the Energy Department's hotline. Part II is an identification of each possible human radiation experiment and the location of records regarding each such experiment. Guidance will later be provided, after consultation with the Human Radiation Interagency Working Group, concerning procedures for actual retrieval of the records. At present, the requirement is only to identify them in the requested reports and to assure their preservation.

The attached guidance provides a definition of the scope of the records search, the requested format for the reports, and other specifics.

Inquiries regarding this matter should be directed to Dr. Gordon K. Soper, Principal Deputy, ATSD(AE), at (703) 697-5161. Thank you for your attention to this important matter.

Harold P. Smith, Jr.

EXHIBIT 8 LOCATING RECORDS OF DOD HUMAN RADIATION EXPERIMENTS (CONTINUED)

SPECIFIC DIRECTION FOR LOCATING RECORDS
OF DOD HUMAN RADIATION EXPERIMENTS

A. Scope of Records Search.

1. Definition of "human radiation experiments".

The Interagency Working Group has adopted the following definition of "human radiation experiments:"

(1) Experiments on individuals involving intentional exposure to ionizing radiation. This category does not include common and routine clinical practices, such as established diagnosis and treatment methods, involving incidental exposures to ionizing radiation.

(2) Experiments involving intentional environmental releases of radiation that (A) were designed to test human health effects of ionizing radiation; or (B) were designed to test the extent of human exposure to ionizing radiation.

2. Other specific experiments.

The Interagency Working Group has also identified several specific experiments for inclusion within the scope of the records search. They are:

(1) The experiment into the atmospheric diffusion of radioactive gases and test of detectability, commonly referred to as "the Green Run test," by the former Atomic Energy Commission (AEC) and the Air Force in December 1949 in Hanford, Washington;

(2) Two radiation warfare field experiments conducted at the AEC's Oak Ridge office in 1948 involving gamma radiation released from non-bomb point sources at or near ground level;

(3) Six tests conducted during 1949-1952 of radiation warfare ballistic dispersal devices containing radioactive agents at the U.S. Army's Dugway, Utah site;

(4) Four atmospheric radiation tracking tests in 1950 at Los Alamos, New Mexico; and

(5) Any other similar human radiation experiments that may later be identified by the Interagency Working Group.

3. Dates of experiments.

For purposes of the identification process, the scope of the search includes all human

EXHIBIT 8 LOCATING RECORDS OF DOD HUMAN RADIATION EXPERIMENTS (CONTINUED)

radiation experiments conducted from 1944 to present. However, experiments conducted after May 20, 1974 (the date of issuance of the Department of Health, Education and Welfare Regulations for the Protection of Human Subjects, 45 CFR Part 46), must be clearly identified as having occurred after that date. This is because records retrieval requirements with respect to experiments conducted after May 20, 1974, will probably be different than requirements regarding experiments from 1944 until May 20, 1974. The differences in requirements will be explained when guidance on records retrieval procedures is provided.

4. Radiation exposure from atmospheric nuclear tests and Hiroshima and Nagasaki occupation excluded from scope.

Former military personnel exposed to ionizing radiation incident to the atmospheric nuclear test program and/or the occupation of Hiroshima and Nagasaki are covered by the existing Nuclear Test Personnel Review (NTPR) program and by existing compensation mechanisms. They are not included in the scope of this records identification process.

B. Component Search Coordinator.

Each DoD component requested to submit a report must identify an individual in the component as the component's coordinator for the effort to locate records of human radiation experiments. This individual will be responsible for the accuracy and completeness of the required reports, and will serve as the contact person for the Command Center. Each report must identify the name, title, address, telephone number, and telefax number of the reporting organization's search coordinator.

C. Identification of Organizations that Might Have Conducted or Sponsored Human Radiation Experiments.

Part I of the requested report requires the identification of DoD organizations that might have conducted or sponsored by contract or grant human radiation experiments. Guidelines for this task include the following.

1. Include predecessor organizations. Each organization identified as one that might have conducted or sponsored human radiation experiments must consider, if the organization is new since 1944, the activities of any predecessor organization.

2. Identify archives. Each organization identified as one that might have conducted or sponsored human radiation experiments must identify archives or records centers where records of such experiments, if conducted, might be located. This must include any archives where such records of any predecessor organizations might be located.

EXHIBIT 8 LOCATING RECORDS OF DOD HUMAN RADIATION EXPERIMENTS (CONTINUED)

D. Document Search Activities by Each Organization That Might Have Conducted or Sponsored Human Radiation Experiments.

Also under Part I of the requested report, each organization identified as one that might have conducted or sponsored human radiation experiments must, for itself and for any predecessor organization, document that it attempted to determine whether it has conducted or sponsored any such experiments. Specific methods for searching may vary based on organization practices and records systems. Methods might include: search for all published and unpublished reports of research findings; review of the organization's contracts and/or grants records; queries to current or former employees with knowledge of historical activities. Each step of the process should be documented and described in Part I of the organization's report. In addition, each organization must maintain a complete file of all relevant memoranda, meeting notes, electronic mail messages, notes of telephone conversations and all other materials that document the search activities of the organization.

E. Identification of Specific Experiments Possibly Within the Scope of the Search.

As described further below, Part II of the requested report identifies specific experiments possibly within the scope of the search and begins the reporting of key facts regarding the experiments. Guidelines regarding this part of the process follow.

1. Err on the side of inclusion.

For purposes of this initial identification of possible experiments, organizations submitting reports should err on the side of inclusion. Reported activities that are outside the scope of the records search can then be excluded prior to actual records retrieval. (Knowledge of related activities, although outside the scope, will help the Command Center deal with inquiries expected from the public through the Energy Department hotline.)

2. Experiments conducted or sponsored by a DoD organization.

Experiments to be included in the identification process are all those conducted by a DoD organization, or predecessor organization, or sponsored in whole or in part by a DoD organization or predecessor organization through a contract or grant. For this purpose, a "contract" should be understood as including any cooperative agreement, memorandum of understanding, or other similar document establishing an agreement between a DoD organization and another party concerning a human radiation experiment.

3. Identify lead agency when more than one is involved.

In cases in which more than one DoD organization was involved, or an agency outside

EXHIBIT 8 LOCATING RECORDS OF DOD HUMAN RADIATION EXPERIMENTS (CONTINUED)

DoD was involved, it is important to identify which agency should be considered the lead agency. This will help avoid duplication of effort in records retrieval activities. If it is not clear which organization was the lead agency, respective activities of the involved agencies should be described so that an appropriate assignment of lead responsibility for records retrieval activities can be made.

F. Identification of Records Regarding Possible Human Radiation Experiments.

Part II of the requested report also identifies existing records pertaining to the possible human radiation experiments that have been identified. Guidelines regarding this part of the process follow.

1. Definition of "records".

"Records" includes a wide range of materials, including reports, letters, memoranda, notes, drafts, logs, handwritten notes, written procedures, medical records, and any other writings and documents, as well as photographs, charts, drawings, machine readable materials, video tape, audio tape, computerized information, and any other source of physically retrievable information.

2. Focus on existing records.

The effort to locate records is restricted to records that currently exist. In the event of an experiment for which some or all records that may have at one time existed cannot now be found, the task of locating records does not require an effort to recreate records regarding individual experiments. If there is a need to reconstruct additional information regarding particular experiments, that will be undertaken separately, pursuant to instructions governing such a task.

3. Prepare to submit records.

Pending further guidance on records retrieval procedures, DoD organizations should make initial preparations for submission of documents to a central repository. These initial preparations include identification of any classification issues that need to be considered, determinations regarding the existence of any other records relating to the experiment, organization of the records, and steps to assure the safekeeping of the records. It is anticipated that when records retrieval procedures are established, the organization will be requested to make two copies of the records, one for submission and one for retention by the organization for purposes of any necessary follow-up activities, and to return the original documents to the proper archives or records repository. However, pending instructions on records retrieval procedures, records are not to be forwarded to the Command Center or other repository. Rather, the records must be maintained by the organization in the original records series in accordance with the organization's established records management system.

EXHIBIT 8 LOCATING RECORDS OF DoD HUMAN RADIATION EXPERIMENTS (CONTINUED)

G. Preservation of Records.

As instructed in Secretary Aspin's January 7 memorandum, each organization must assure that records relating to human radiation research are preserved and not destroyed. Persons responsible for routine records disposal procedures must be advised of the need to preserve these records.

H. Classification and Declassification Issues.

1. Policy of maximum declassification.

The Interagency Working Group has established the policy that agencies should, upon locating records of human radiation experiments within the scope of this records search, review the records for national security classification and should declassify such records as soon as practicable and to the maximum extent possible.

2. Classification review procedures.

Classified information must be reviewed by the appropriate classification authorities before it can be declassified. Consult DoD Directive 5200.1-R, Chapter III, for guidance on declassification procedures. If there are documents within DoD's possession for which another agency is the original classification authority, that agency must make the determination to declassify the information. Every effort should be made to expedite this declassification process.

I. Contractor and Grantee Records.

When an organization determines that records of a human radiation experiment may be in the possession of a contractor or grantee of the organization, the organization must document the nature of those records and make plans to pursue retrieval. The organization should attempt to find the governing contract or grant documents pertaining to the research project or program involved and should obtain the assistance of the organization's Staff Judge Advocate or legal counsel to determine rights and obligations pursuant to the governing documents. These activities should proceed on an expedited basis.

J. Restrictions on the Release of Records.

1. Release of records outside Freedom of Information Act channels.

Because there may be personal privacy, security classification, or other restrictions on the release of records of human radiation experiments, it is essential that DoD organizations not

EXHIBIT 8 LOCATING RECORDS OF DoD HUMAN RADIATION EXPERIMENTS (CONTINUED)

release records to the public, unless the release has been approved by the Command Center.

2. Freedom of Information Act procedures.

Guidance will be provided in the very near future through Freedom of Information Act (FOIA) office channels regarding the handling of FOIA requests pertaining to human radiation experiments.

K. Format for Part I of Report.

The following format will assist in the compilation of the information requested. In any case in which the reporting organization has no information to report, a negative report is required.

1. Identify each organization that, based on mission or activities, might have conducted or sponsored human radiation experiments. Give name and location(s) of the organization and name(s) and location(s) of any predecessor organizations that might have conducted or sponsored such experiments.

2. For each organization identified in item 1, identify the location(s) of records of the organization where records of human radiation experiments, if conducted or sponsored, might be located (or have been located).

3. For each organization identified in item 1 and each records repository identified in item 2, describe in detail the efforts undertaken to determine if records exist of human radiation experiments. List all files and file systems searched and all individuals consulted.

4. Based on the results of the search described in item 3, state whether any records of possible human radiation experiments were found, and, if so, identify the experiments.

L. Format for Part II of Report.

For each possible human radiation experiment identified in item 4 of Part I, provide as much of the following information as is presently possible. Start each separate experiment on a separate page.

1. Identify the possible human radiation experiment.

2. State where and when it took place.

3. Identify the primary researcher(s).

EXHIBIT 8 LOCATING RECORDS OF DOD HUMAN RADIATION EXPERIMENTS (CONTINUED)

4. Identify the organizations and entities involved in the experiment. Include all DoD organizations, any other federal agency involved in conducting or sponsoring the project, and any contractors, grantees, or other parties. Identify the DoD organization and/or the other agency that was the lead agency.

5. Indicate the number of human subjects of the experiment. Indicate any available information on known characteristics of the class of subjects, such as: active duty members, researchers, a racial or ethnic group, prisoners, institutionalized persons, medical patients, children, pregnant women. Indicate whether available information includes names or other identifying information concerning the subjects.

6. Summarize the experiment, including an identification of the purpose of the experiment and the nature of the use of ionizing radiation. As examples of the types of information that would be helpful, if available information permits, preliminarily classify the possible human radiation experiment into one of the following categories. (Note that these categories are solely for the purpose of obtaining preliminary information about the experiment that may facilitate organization of the records retrieval process. These are not official classifications for any purpose. In addition, not all of these categories are necessarily within the actual scope of the records search activity, but might be involved in the initial identification because of the guidance to err on the side of inclusion of all possible human radiation experiments.)

(a) Clear purpose radiation research -- the purpose of the experiment was to test the human health effects of ionizing radiation. Example: subjects exposed to radiation for the purpose of measuring adverse reactions.

(b) Therapeutic research involving radiation -- the purpose of the experiment was to test the safety and efficacy of using ionizing radiation to diagnose or treat a disease or medical condition. Example: clinical research on bone marrow transplantation.

(c) Other research -- the experiment was for another purpose (i.e., other than categories (a) or (b)), but in the course of the research project, ionizing radiation was used in accordance with a routine, diagnostic procedure. Example: research of effects of dental coating to prevent cavities, monitored through periodic dental X-rays.

(d) Treatment use of radiation -- the use of radiation was for a medical treatment purpose, not a research purpose, but data were maintained on results or side effects. Example: radiation used as cancer treatment, with data reported on side effects.

(e) Unknown/uncertain -- available information does not indicate classification into a category.

7. Identify the location(s) of records regarding this experiment. Indicate whether any records are in the possession of a contractor or grantee, and, if so, what action will be initiated to

EXHIBIT 8 LOCATING RECORDS OF DoD HUMAN RADIATION EXPERIMENTS (CONTINUED)

retrieve them. Indicate the name of the individual responsible for the maintenance of the records.

8. Indicate the estimated nature and quantity of the records.

9. Indicate whether the records are classified, and, if so, what action has been or will be initiated to consider the classification.

M. Initial and Follow-Up Reports.

The initial report on locating records of human radiation experiments is due February 14. It is anticipated that the identification of organizations that might have conducted or sponsored human radiation experiments (Part I of the report) will be complete or substantially complete by that date. It is also expected that the identification of all specific experiments possibly within the scope of the search will not be complete, but that Part II of the February 14 report will be an interim report. A complete report, consisting of both Parts, is due February 28. Any reporting organization that is unable to give a complete report by February 28 must nonetheless report by that date and provide the necessary supplements as soon thereafter as possible. Even after an organization provides its complete report, if any new information is discovered regarding the matters covered in the reports submitted, the organization has a duty to supplement its reports to assure their completeness and accuracy.

N. Resolution of Questions.

Every effort should be made to avoid the need to repeat any of the steps involved in the records location task. Therefore, organizations should be encouraged to resolve any questions or uncertainties at the earliest possible time. This should be done through the organization's chain of authority and up to the Command Center.

O. Command Center Address and Telephone.

The address and telephone number of the Command Center, to which the requested reports are to be sent and to which inquiries may be made, are:

DoD Radiation Experiments Command Center
1211 S. Fern St., Room 217
Arlington, Va. 22202

Telephone: (703) 602-1365

EXHIBIT 8 LOCATING RECORDS OF DOD HUMAN RADIATION EXPERIMENTS (CONTINUED)

HUMAN RADIATION EXPERIMENTS IDENTIFICATION

1. **NAME.** Identify the possible human radiation experiment.

2. **WHERE/WHEN.** State where and when it took place.

3. **RESEARCHER.** Identify the primary researcher(s).

4. **AGENCY.** Identify the organizations involved. Include all DoD organizations, any other agencies, and any contractors, or other parties. Identify the lead agency.

5. **SUBJECTS.** Indicate the number of human subjects of the experiment. Indicate any available information on known characteristics of the class of subjects, such as: active duty members, a racial or ethnic group, prisoners, medical patients. Indicate whether available information includes names or other identifying information concerning the subjects.

6. **SUMMARY.** Summarize the experiment, including an identification of the purpose of the experiment and the nature of the use of ionizing radiation. As examples of the types of information that would be helpful, if available information permits, preliminarily classify the possible human radiation experiment into one of the following categories.

(a) Clear purpose radiation research -- the purpose of the experiment was to test the human health effects of ionizing radiation. Example: subjects exposed to radiation for the purpose of measuring adverse reactions.

(b) Therapeutic research involving radiation -- the purpose of the experiment was to test the safety and efficacy of using ionizing radiation to diagnose or treat a disease or medical condition. Example: clinical research on bone marrow transplantation.

(c) Other research -- the experiment was for another purpose (i.e., other than categories (a) or (b)), but in the course of the research project, ionizing radiation was used in accordance with a routine, diagnostic procedure. Example: research of effects of dental coating to prevent cavities, monitored through periodic dental X-rays.

(d) Unknown/uncertain -- available information does not indicate classification into a category.

7. **RECORDS LOCATION.** Identify the location(s) of records regarding this experiment. Indicate whether any records are in the possession of a contractor or grantee. Indicate the name of the individual responsible for the maintenance of the records.

8. **RECORDS DESCRIPTION.** Indicate estimated nature and quantity of the records.

9. **CLASSIFICATION.** Indicate whether the records are classified, and, if so, what action has been or will be initiated to consider the classification.

EXHIBIT 9 EXPANSION OF HUMAN RADIATION RESEARCH REVIEW

ASSISTANT TO THE SECRETARY OF DEFENSE
3050 DEFENSE PENTAGON
WASHINGTON, DC 20301-3050

June 14, 1994

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS
CHAIRMAN, JOINT CHIEFS OF STAFF
DIRECTOR, DEFENSE RESEARCH AND ENGINEERING
ASSISTANT SECRETARY OF DEFENSE (HEALTH AFFAIRS)
DIRECTOR OF ADMINISTRATION AND MANAGEMENT
DIRECTOR, DEFENSE NUCLEAR AGENCY

SUBJECT: Expansion of Human Radiation Research Review to Include Policy Making Activities of DoD Components

On January 18, 1994, the White House asked each agency to "establish forthwith an initial procedure for locating records of human radiation experiments" conducted or sponsored by the agency as a prelude to the "retrieval and inventory" of such records. In my January 31 memorandum, I established a process, consisting of two phases, for DoD's response to this request. Phase 1, which is now nearing completion, consists of the identification of all records of possible DoD human radiation experiments. Phase 2, following further guidance from the Interagency Working Group and the Presidential Advisory Committee, will entail the actual retrieval of pertinent records.

As part of, and in addition to, the process of retrieving records of actual experiments, the Advisory Committee has launched a major effort to compile records regarding the DoD policy making, dating back to 1944, relating to human radiation research. I agree with the Advisory Committee that this is a useful line of inquiry, and I have pledged DoD's support. To assure that support, I am modifying our process to establish what we might call phase 1-B, to compile records of policy making activities of DoD relating to human radiation experimentation. I am also supplementing the DoD Steering Committee specifically to include representatives of offices needed to assist in this review of policy making activities.

Specifically, I ask that the Secretaries of the Army, Navy, and Air Force include in your respective review groups, if you have not already done so, a representative of the historical office and the records management office responsible for the Office of the Secretary of each respective service. The Secretary of the Army's review should include records of the former War Department, including the Medical Research Committee of the Office of Scientific Research and Development. For the Office of the Secretary of Defense, I request the active participation of a representative of: (1) the OSD Historian (DA&M) regarding OSD relevant policy development activities; (2) the Records Management Division (DA&M) regarding identification and retrieval of records of policy making activities; (3) the Director of Defense Research and Engineering (already on the Steering Committee) regarding DoD policy on human subject research, including activities of the former DoD Research and Development Board; (4) the Assistant Secretary of

EXHIBIT 9 EXPANSION OF HUMAN RADIATION RESEARCH REVIEW (CONTINUED)

Defense (Health Affairs) regarding medical research policy, including activities of the former Armed Forces Medical Policy Council; and (5) the Assistant to the Secretary of Defense (Atomic Energy) (already on the Steering Committee) regarding DoD policy on atomic energy related research.

To provide additional context for this "phase 1-B" task, attached are excerpts from the Advisory Committee staff's Preliminary Report on the DoD review process and additional details regarding the needed search effort. I ask the OSD addressees of this memorandum to designate their respective representatives by June 17 to my Principal Deputy, Gordon Soper, room 3E1074, (703) 697-5561.

Thank you for your continued support.

Harold P. Smith, Jr.

Attachments
Copy to: Honorable John Deutch, Deputy Secretary of Defense
Ruth Faden, M.D., M.P.H., Chairperson,
Advisory Committee on Human Radiation Experiments

EXHIBIT 9 EXPANSION OF HUMAN RADIATION RESEARCH REVIEW (CONTINUED)

RESPONSIBILITIES OF DoD COMPONENTS FOR "PHASE 1-B" --
COMPILATION OF RECORDS OF POLICY MAKING ACTIVITIES
CONCERNING HUMAN RADIATION EXPERIMENTS

A. Scope of search.

1. Records covered.

Records covered by this search include any regulations, directives, memoranda, policy statements, letters of instruction, or any other expression of policy or procedure regarding human radiation experiments conducted or sponsored by DoD. This includes any policy or procedures regarding development or evaluation of proposed human radiation experiments, as well as the conduct or oversight of such experiments and the reporting or use of results of the experiments. Records covered by this search also include all records relating to the development, implementation and oversight of any expression of policy or procedure. This includes any proposed policies and procedures, the rationale and records of deliberations on proposals, commentary on implementation, and reviews of results.

2. Dates covered.

The dates of records are 1944 until 1974, with priority on the earliest records. A similar search may subsequently be required for post-1974 records.

3. Definitions.

For this purpose, the definitions of "human radiation experiments" and "records" are the same as in the January 31, 1994, attachment to Dr. Smith's memorandum.

B. Report requested.

Each addressee is asked to submit a report regarding the search effort of the component and the results of the search. The Radiation Experiments Command Center (RECC) will coordinate the search effort through the DoD Steering Committee and assist in conducting archives records searches.

C. Records repository.

The central repository for all records regarding DoD human radiation experiments is the RECC. All records regarding policy making activities are to be forwarded to:

DoD Radiation Experiments Command Center
6801 Telegraph Road
Alexandria, Va. 22310-3398

Telephone: (703) 602-1365

EXHIBIT 10 RESPONSE BY THE DoD TO THE FINDINGS AND RECOMMENDATIONS OF THE ACHRE

THE SECRETARY OF DEFENSE
WASHINGTON, DC 20301-1000

C/back

30 OCT 1995

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS
CHAIRMAN, JOINT CHIEFS OF STAFF
UNDER SECRETARIES OF DEFENSE
DIRECTOR, DEFENSE RESEARCH AND ENGINEERING
ASSISTANT SECRETARIES OF DEFENSE
GENERAL COUNSEL
ASSISTANTS TO THE SECRETARY OF DEFENSE
DIRECTORS OF THE DEFENSE AGENCIES

SUBJECT: Response by the DoD to the Findings and Recommendations of the Advisory Committee on Human Radiation Experiments.

I am aware of your commendable efforts in support of the Advisory Committee on Human Radiation Experiments. Your hard work resulted in the Department leading the way in the timely declassification of 1,200 documents requested by the Committee, retrieval of 10,000 key documents related to policy and experiments and DoD responding to more than 7,000 public inquiries. Thank you all for a job well done.

Now that the Advisory Committee has completed its Final Report, we must continue to build on the excellent progress that the Department has made in the first phase of this important project. I want to ensure that we continue to respond in a timely manner to Congressional and public inquiries, intensify public access initiatives and, when appropriate, declassify relevant documents. Protecting the rights and interests of human subjects will continue to have the utmost priority within the Department. Accordingly, under the direction of the Director, Defense Research and Engineering, responsible agencies must take prompt action on the President's charge to review human subject protection policies based on the findings and recommendations of the Advisory Committee and provide input to the National Bioethics Advisory Commission.

I am reappointing Dr. Harold P. Smith, Jr., Assistant to the Secretary of Defense (Atomic Energy), as the DoD-wide focal point for the continuation of the tasks remaining from phase one of this activity and the timely follow-up to the findings and recommendations of the Final Report of the Advisory Committee. He will work with the Interagency Working Group and coordinate our efforts with those of the other relevant agencies.

Inquiries regarding this matter should be directed to Dr. Gordon K. Soper, Principal Deputy, ATSD(AE), (703)697-5561.

William J. Perry

EXHIBIT 11 RESPONSE BY THE DoD TO THE FINDINGS AND RECOMMENDATIONS OF THE ACHRE

ATOMIC ENERGY

ASSISTANT TO THE SECRETARY OF DEFENSE
3050 DEFENSE PENTAGON
WASHINGTON, DC 20301-3050

NOV 2 1995

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS
UNDERSECRETARIES OF DEFENSE
DIRECTOR, DEFENSE RESEARCH AND ENGINEERING
ASSISTANT SECRETARIES OF DEFENSE
GENERAL COUNSEL
ASSISTANTS TO THE SECRETARY OF DEFENSE
DIRECTORS OF THE DEFENSE AGENCIES

SUBJECT: Response by the DoD to the Findings and Recommendations of the Advisory Committee on Human Radiation Experiments (ACHRE)

On January 7, 1994, Secretary Aspin appointed me as the DoD-wide focal point for the Department's review of human subjects radiation experiments. On January 18, 1994, the President established the Advisory Committee on Human Radiation Experiments to conduct a government-wide review of such experiments and submit a final report to the President within one year (later six month extension). In support of the ACHRE, DoD and seven other Departments/Agencies conducted extensive record reviews to determine our involvement in conducting or sponsoring human subject experiments during the past 50 years. DoD was a key contributor in the overall success of this review (enclosure 1).

On October 3, 1995, almost 18 months after the project started, Dr. Ruth Faden, a bioethicist at John Hopkins University and Chair of the Advisory Committee on Human Radiation Experiments, presented the Final Report to the President. Concurrently, the President, via Executive Order, (enclosure 2) established a National Bioethics Advisory Commission (NBAC) and charged each responsible agency to immediately review its human research policy and procedures relative to the findings and recommendations of the Advisory Committee and submit a report to the NBAC within 120 days from the effective date of the executive order.

To ensure continuity in completing the final phase of this important project, Secretary Perry has reappointed me as the DoD-wide focal point (Enclosure 3). In reassuming the lead in this matter, I join the Secretary in thanking you and those from your agency who participated in this effort for the great support during the first phase.

EXHIBIT 11 RESPONSE BY THE DoD TO THE FINDINGS AND RECOMMENDATIONS OF THE ACHRE (CONT.)

Within the Department, the DoD Human Radiation Experiments Steering Committee, which I chair, will continue, with members from Defense Research and Engineering (DDRE), the Services, the Defense Nuclear Agency, the Radiation Experiments Command Center (RECC), and OSD General Counsel. Our primary attention will be on three implementation issues. First, it is essential that we work promptly and effectively in developing appropriate responses to the NBAC no later than February 3, 1996. To this end, the DoD will work closely with the Interagency Working Group to ensure a coordinated effort in responding to the NBAC concerning informed consent and policy matters regarding the protection of human subjects in research. DDRE has primary oversight in this matter.

Second, as concerns other ACHRE follow-on issues, the RECC has the lead in completing several actions that will require your support. Project officers must continue to work closely with the RECC to ensure timely responses to Congressional and public inquiries and Freedom of Information Act requests. Also, the RECC has begun initial work to publish a book to reflect DoD's commitment to openness by summarizing what DoD found during its human radiation experiments records review. The proposed book is targeted for completion in March 1996 and will have chapters specific to the research efforts of the Services and DoD agencies. Therefore, the RECC will need the help of project officers to review both near final and final drafts for substantive and factual accuracy. Particulars about the book and final draft reviews will be provided via separate correspondence. Additionally, the Services and responsible DoD agencies in coordination with the RECC must take action to ensure that any documents that the Advisory Committee requested to be declassified that are still being processed are declassified and forwarded via the RECC to the National Records Center. Such action is necessary to ensure the continued integrity of our records review.

The third major implementation issue is remedies and compensation actions. On this, OSD General Counsel will continue to have the lead to ensure appropriate DoD input.

Inquiries regarding this matter should be directed to Dr. Gordon K. Soper, Principal Deputy, ATSD (AE) at (703) 697-5561 or Colonel Claud Bailey, Jr., at (703) 442-5675. Thank you for your continued support.

Harold P. Smith, Jr.

APPENDIX 3

ACRONYMS & ABBREVIATIONS

A

AAF	Army Air Forces
AAL	Arctic Aeromedical Laboratory
ACHRE	Advisory Committee on Human Radiation Experiments
ACR	American College of Radiology
AEC	Atomic Energy Commission [predecessor to the Department of Energy]
AFB	Air Force Base
AFMPC	Armed Forces Medical Policy Council
AFR	Air Force Regulation
AFRRI	Armed Forces Radiobiology Research Institute
AFSWP	Armed Forces Special Weapons Project (predecessor to DASA)
AMA	American Medical Association
AR	Army Regulation
ATSD (AE)	Assistant to the Secretary of Defense (Atomic Energy)

B

BUMED	Bureau of Medicine and Surgery, Navy

C

CBDCOM	Chemical and Biological Defense Command
CDC	Centers for Disease Control and Prevention
CIA	Central Intelligence Agency
CIC	Coordination and Information Center
CMS	Committee on Medical Sciences

D

DASA	Defense Atomic Support Agency (predecessor to DNA and successor to AFSWP)
DBM	Division of Biology and Medicine (of the Atomic Energy Commission)
DDR&E	Director, Defense Research and Engineering
DHEW	Department of Health, Education and Welfare
DHHS	Department of Health and Human Services
DNA	Defense Nuclear Agency (predecessor to DSWA and successor to DASA)
DoD	Department of Defense
DOE	Department of Energy
DPG	Dugway Proving Ground
DSWA	Defense Special Weapons Agency (successor to DNA)
DVA	Veterans Administration

E

EO	Executive Order

F

FDA	Food and Drug Administration
FOIA	Freedom of Information Act

G

GAO	General Accounting Office
GC	General Counsel
GSA	General Services Administration

H

HID	Health Instrument Division of the General Electric Co.
HEDR	Hanford Environmental Dose Reconstruction Project
HRE	Human Radiation Experiments
HREX	Human Radiation Experiments Database
HSRB	Human Subject Review Board
HURAD	Human Use and Regulatory Affairs Division

I

IRB	Institutional Review Board
IWG	Interagency Working Group

J

JAG	Judge Advocate General
JCS	Joint Chiefs of Staff
JPMAAW	Joint Panel on the Medical Aspects of Atomic Warfare

L

LASL	Los Alamos Scientific Laboratory, now called Los Alamos National Laboratory (LANL)

N

NARA	National Archives and Records Administration
NASA	National Aeronautics and Space Administration
NEPA	Nuclear Energy for the Propulsion of Aircraft
NEPA/MAC	The Nuclear Engine for the Propulsion of Aircraft/Medical Advisory Committee on Radiation Tolerance of Military Personnel
NIH	National Institutes of Health
NMRI	Naval Medical Research Institute
NMRU	Naval Medical Research Unit
NTPR	Nuclear Test Personnel Review Program

O

OASG	Office of the Army Surgeon General
ONR	Office of Naval Research
OSD	Office of the Secretary of Defense

P

PBI	Partial-Body Irradiation

R

R	Roentgen
RaLa	Radioactive lanthanum, radio lanthanum
RDB	Research and Development Board
RECC	Radiation Experiments Command Center
RW	Radiological Warfare

T

TBI	Total-Body Irradiation
TECOM	Army Test and Evaluation Command
TNT	Trinitrotoluene
TSP	Technical Steering Panel

U

UCCM	University of Cincinnati College of Medicine
USAF	United States Air Force
USAF SAM	United States Air Force School of Aviation Medicine
USUHS	Uniformed Services University of the Health Sciences

V

VA	Department of Veterans Affairs (successor to Veterans Administration)

APPENDIX 4

RADIATION TERMS

Defined below are some technical terms relating to radiation.*

RADIOACTIVITY

Radioactivity is the tendency of unstable atoms to undergo a spontaneous, energy-releasing change in their structure. The energy released is called radiation. It occurs at various energy levels. At a certain point, radiation energy is sufficient to strip electrons from the atoms in materials it strikes and is therefore called *ionizing radiation*. It is particularly dangerous for humans because these energy levels are such that they also can cause damage to living tissues. Ionizing radiation may involve alpha particles, beta particles, gamma rays, x-rays, or neutrons.

ALPHA PARTICLES

An alpha particle is a high-energy particle with a very short range. It does not pose an external hazard because it cannot penetrate human skin. It may be stopped by a single sheet of paper. However, if inhaled or ingested, the particles come in direct contact with tissue cells and can cause severe damage. Accordingly, alpha particles present a serious internal hazard. Uranium, radium, and plutonium all emit alpha particles.

BETA PARTICLES

Beta particles exhibit a wide range of energy levels. Some have sufficient energy to penetrate human skin and will cause skin burns. These particles can cause damage if inhaled or ingested. Beta particles can be stopped by plastic, aluminum, and wood. Tritium is one example of a beta emitter.

GAMMA RAYS AND X-RAYS

Both of these are high-energy emissions that easily penetrate the human body. They are, therefore, dangerous in high amounts as external radiation hazards. They can be stopped by dense materials, such as lead, concrete, or steel. Gamma rays are produced by isotopes such as lanthanum-140, cesium-137, and cobalt-60. X-rays are produced by medical x-ray tubes and the x-ray machines used to examine carry-on baggage at airports.

NEUTRONS

Neutrons are a component of the nucleus of an atom. Neutron radiation can be harmful to living things. Neutrons are liberated in great numbers in a nuclear reactor, but they do not present a hazard to humans because they are absorbed by the heavy shielding that encloses the reactor. Neutrons are also emitted during the spontaneous decay of certain radionuclides such as californium-252.

Amount of radiation is expressed in several ways. A *curie* is a measure of activity, or the rate of disintegration of atoms undergoing change. This unit of measure is often expressed as *millicuries* (thousandths of a curie) or *microcuries* (millionths of a curie). A *roentgen* is a measure of the ionization of air by x-rays or gamma rays.

*Source: U.S. Department of Energy, Assistant Secretary for Environment, Safety, and Health. Human Radiation Experiments: The Department of Energy Roadmap to the Story and the Records. Page 295. February 1995.

Exposure

Exposure refers to being placed in a field of radiation energy. *Dose* refers to energy imparted per unit mass of tissue. A *rad* is a measure of the absorbed dose to tissue from exposure to radiation; that is, the amount of energy deposited per unit mass of tissue. A *rem* is a measure of dose equivalent in man. It is the dose in rads multiplied by a weighting factor to account for the more damaging effects of alpha particles and neutron radiation.

Background Radiation

Background radiation refers to the natural radiation to which people are exposed in daily life. It differs for different locations and different circumstances. Brick and wood homes emit different levels of background radiation. Cities at different elevations have different levels of background cosmic radiation. For example, the average annual dose from all sources to U.S. residents is estimated to be 200 millirems per year. However, the average dose to residents of Los Alamos, New Mexico, a city at high elevation, is 330 millirems per year. A transcontinental airplane flight will result in a dose of about 4 millirems to a passenger. A standard chest x-ray will result in a dose of about 10 millirems.

Occupational Dose

Occupational dose refers to the dose that people receive in their workplace. To provide for the safety of workers, the International Commission on Radiological Protection has established certain standards to limit the dose received by workers. Standards for minors are 10 percent of the dose for adults. These annual dose limits for radiation workers are:

whole-body	5 rem
skin or any extremities	50 rem
eyes	15 rem
embryo/fetus	0.5 rem

By comparison, the annual dose limit for the general public (not radiation workers) set by the Commission is 0.1 rem.